

English Core
Code No. 301
Class XI (2021-22)
Term Wise Syllabus

SECTION	TERM I	WEIGHTAGE (IN MARKS)	TERM II	WEIGHTAGE (IN MARKS)
A	Reading Comprehension: <ul style="list-style-type: none"> Unseen passage (factual, descriptive or literary/ discursive or persuasive) Case Based Unseen (Factual) Passage 	8 + 5 = 13	Reading Comprehension: <ul style="list-style-type: none"> Unseen passage (factual, descriptive or literary /discursive or persuasive) Unseen passage for Note Making and Summarising 	8 + 5 = 13
B	Creative Writing Skills and Grammar: <p>Short Writing Tasks</p> <ul style="list-style-type: none"> Notice Writing <p>Long Writing Tasks</p> <ul style="list-style-type: none"> Business or Official Letters(Making enquiries, registering complaints, asking for or giving information, placing orders and sending replies) Speech <p>Grammar</p> <ul style="list-style-type: none"> Determiners Tenses Re-ordering of Sentences <p>{MCQs on Gap filling/ Transformation of Sentences}</p>	3 + 5 + 4 = 12	Creative Writing Skills and Grammar: <p>Short Writing Tasks</p> <ul style="list-style-type: none"> Posters <p>Long Writing Tasks</p> <ul style="list-style-type: none"> Official Letters: e.g. to school/college authorities (regarding admissions, school issues, requirements / suitability of courses) Debate <p>Grammar</p> <ul style="list-style-type: none"> Determiners Tenses Re-ordering of Sentences <p>{MCQs on Gap filling/ Transformation of Sentences }</p>	3 + 5 + 4 = 12
C	Literature: Literary-prose/poetry extracts (seen- texts) comprehension and appreciation. (Two Extracts) Questions Based on Texts to assess comprehension and appreciation, analysis, inference, extrapolation <p>Book-Hornbill:</p> <ul style="list-style-type: none"> The Portrait of a Lady (<i>Prose</i>) A Photograph (<i>Poem</i>) “We’re Not Afraid to Die... if We Can All Be Together” (<i>Prose</i>) Discovering Tut: the Saga Continues The Laburnum Top (<i>Poem</i>) Landscape of the Soul (<i>Prose</i>) <p>Book-Snapshots:</p> <ul style="list-style-type: none"> The Summer of the Beautiful White Horse(<i>Prose</i>) The Address (<i>Prose</i>) Ranga’s Marriage (<i>Prose</i>) 	9 Marks for Hornbill + 6 Marks for Snapshots = 15 Marks	Literature: Questions based on extracts/texts to assess comprehension and appreciation, analysis, inference, extrapolation <p>Book-Hornbill:</p> <ul style="list-style-type: none"> The Voice of the Rain (<i>Poem</i>) The Ailing Planet: The Green Movement’s Role (<i>Prose</i>) The Browning Version(<i>Play</i>) Childhood (<i>Poem</i>) Silk Road (<i>Prose</i>) <p>Book-Snapshots:</p> <ul style="list-style-type: none"> Albert Einstein at School (<i>Prose</i>) Mother’s Day (<i>Play</i>) Birth (<i>Prose</i>) 	9 Marks for Hornbill + 6 Marks for Snapshots = 15 Marks
	TOTAL	40	TOTAL	40
	ASL	10	ASL	10
	GRAND TOTAL	40 + 10 = 50 MARKS	GRAND TOTAL	40 + 10 = 50 MARKS

Prescribed Books

1. **Hornbill:** English Reader published by National Council of Education Research and Training, New Delhi
2. **Snapshots:** Supplementary Reader published by National Council of Education Research and Training, New Delhi

English Core
Code No. 301
Class XII (2021-22)
Term Wise Syllabus

SECTION	TERM 1	WEIGHTAGE (IN MARKS)	TERM II	WEIGHTAGE (IN MARKS)
A	Reading Comprehension: (Two Passages) <ul style="list-style-type: none"> • Unseen passage (factual, descriptive or literary/ discursive or persuasive) • Case Based Unseen (Factual) Passage 	14 (8+6 Marks)	Reading Comprehension: (Two Passages) <ul style="list-style-type: none"> • Unseen passage (factual, descriptive or literary/ discursive or persuasive) • Case Based Unseen (Factual) Passage 	14 (8+6 Marks)
B	Creative Writing Skills : <u>Short Writing Tasks</u> <ul style="list-style-type: none"> • Notice Writing • Classified Advertisements <u>Long Writing Tasks(One)</u> <ul style="list-style-type: none"> • Letter to an Editor (giving suggestions or opinion on issues of public interest) • Article Writing 	3+5 marks Total=08	Creative Writing Skills : <u>Short Writing Tasks</u> <ul style="list-style-type: none"> • Formal & Informal Invitation Cards or the Replies to Invitation/s <u>Long Writing Tasks(One)</u> <ul style="list-style-type: none"> • Letter of Application for a Job • Report Writing 	3+5 Marks Total=08
C	Literature : Literary-prose/poetry extracts (seen- texts) to assess comprehension and appreciation, analysis, inference, extrapolation Questions Based on Texts to assess comprehension and appreciation, analysis, inference, extrapolation <u>Book- Flamingo (Prose)</u> <ul style="list-style-type: none"> • The Last Lesson • Lost Spring • Deep Water <u>Book-Flamingo (Poetry)</u> <ul style="list-style-type: none"> • My Mother at Sixty-Six • An Elementary School Classroom in a Slum • Keeping Quiet <u>Book-Vistas (Prose)</u> <ul style="list-style-type: none"> • The Third Level • The Enemy 	11 Marks for Flamingo + 7 Marks for Vistas = 18 Marks	Literature: Questions based on extracts/texts to assess comprehension and appreciation, analysis, inference, extrapolation <u>Book-Flamingo (Prose)</u> <ul style="list-style-type: none"> • The Rattrap • Indigo <u>Book-Flamingo (Poetry)</u> <ul style="list-style-type: none"> • A Thing of Beauty • Aunt Jennifer's Tigers <u>Book-Vistas (Prose)</u> <ul style="list-style-type: none"> • Should Wizard Hit Mommy? • On the Face of It • Evans Tries an O Level 	11 Marks for Flamingo + 7 Marks for Vistas = 18 Marks
	TOTAL	40	TOTAL	40
	ASL	10	ASL	10
	GRAND TOTAL	40 + 10 = 50	GRAND TOTAL	40 + 10 = 50

Prescribed Books

1. **Flamingo:** English Reader published by National Council of Education Research and Training, New Delhi
2. **Vistas:** Supplementary Reader published by National Council of Education Research and Training, New Delhi

Guidelines for Assessment in Listening and Speaking Skills (ALS)

Classes XI-XII English Core (Code 301) Total Marks: 20

Term I: 10 Marks: Assessment of Listening and Speaking Skills

ALS must be seen as an integrated component of all four language skills rather than a compartment of two. Suggested activities, therefore, take into consideration an integration of the four language skills but during assessment, emphasis will be given to speaking and listening, since reading and writing are already being assessed in the written exam.

Listening Skill:

The focus is to use the assessment of Listening Skills for improving learners' competency to listen for basic interpersonal, instructional and academic purposes. A number of sub-skills need to be developed in the everyday classroom transaction. Given below are some of the sub-skills of listening which need to be assessed for the Internal Assessment component of Listening:

- i. Listening for Specific Information
- ii. Listening for General Understanding
- iii. Predictive Listening
- iv. Inferential Listening
- v. Listening for Pleasure
- vi. Intensive Listening
- vii. Evaluative Listening

Hence, the assessment items being prepared by subject teachers must assess the above.

Speaking Skill:

Assessment of speaking skills must be made an important component of the overall assessment, using this assessment as learning.

i. Activities:

- Subject teachers must refer to books prescribed in the syllabus.
- In addition to the above, teachers may plan their own activities and create their own material for assessing the listening and speaking skills.

ii. Parameters for Assessment: The listening and speaking skills are to be assessed on the following parameters:

- a) Interactive competence (Initiation & turn taking, relevance to the topic).
- b) Fluency (cohesion, coherence and speed of delivery).
- c) Pronunciation
- d) Language (accuracy and vocabulary).

A suggestive rubric is given below:

	1.	2.	3.	4.	5.
Interaction	<ul style="list-style-type: none"> Contributions are mainly unrelated to those of other speakers Shows hardly any initiative in the development of conversation Very limited interaction 	<ul style="list-style-type: none"> Contributions are often unrelated to those of the other speaker Generally passive in the development of conversation 	<ul style="list-style-type: none"> Develops interaction adequately, makes however minimal effort to initiate conversation Needs constant prompting to take turns 	<ul style="list-style-type: none"> Interaction is adequately initiated and develop Can take turn but needs little prompting 	<ul style="list-style-type: none"> Can initiate & logically develop simple conversation on familiar topics Can take turns appropriately
Pronunciation	<ul style="list-style-type: none"> Insufficient accuracy in pronunciation; many grammatical errors Communication is severely affected 	<ul style="list-style-type: none"> Frequently unintelligible articulation Frequent phonological errors Major communication problems 	<ul style="list-style-type: none"> Largely correct pronunciation & clear articulation except occasional errors Some expressions cause stress without compromising with understanding of spoken discourse. 	<ul style="list-style-type: none"> Mostly correct pronunciation & clear articulation Can be clearly understood most of the time; very few phonological errors 	<ul style="list-style-type: none"> Can pronounce correctly & articulate clearly Is always comprehensible; uses appropriate intonation
Fluency & Coherence	<ul style="list-style-type: none"> Noticeably/ long pauses; rate of Speech is slow Frequent repetition and/or self- correction Links only basic sentences; breakdown of coherence evident 	<ul style="list-style-type: none"> Usually fluent; produces simple speech fluently, but loses coherence in complex communication Often hesitates and/or resorts to slow speech Topics partly developed; not always concluded logically 	<ul style="list-style-type: none"> Is willing to speak at length, however repetition is noticeable Hesitates and/or self corrects; occasionally loses coherence Topics mainly developed, but usually not logically concluded 	<ul style="list-style-type: none"> Speaks without noticeable effort, with a little repetition Demonstrates hesitation to find words or use correct grammatical structures and/or self-correction Topics not fully developed to merit 	<ul style="list-style-type: none"> Speaks fluently almost with no repetition & minimal hesitation Develops topic fully & coherently
Vocabulary & Grammar	<ul style="list-style-type: none"> Demonstrates almost no flexibility, and mostly struggles for appropriate words Uses very basic vocabulary to express view-points. 	<ul style="list-style-type: none"> Communicates with limited flexibility and appropriacy on some of the topics Complex forms and sentence structures are rare; exhibits limited vocabulary to express new ideas 	<ul style="list-style-type: none"> Communicates with limited flexibility and appropriacy on most of the topics Sometimes uses complex forms and sentence structures; has limited vocabulary to describe/ express new points 	<ul style="list-style-type: none"> Can express with some flexibility and appropriacy on most of the topics Demonstrates ability to use complex forms and sentence structures most of the time; expresses with adequate vocabulary 	<ul style="list-style-type: none"> Can express with some flexibility and appropriacy on a variety of topics such as family, hobbies, work, travel and current events Frequently uses complex forms and sentence structures; has enough vocabulary to express himself/ herself

iii. Schedule:

- The practice of listening and speaking skills should be done throughout the academic year.
- The final term I assessment of the skills is to be done as per the convenience and schedule of the school.

Term II: 10 Marks – Project Work + Viva-Voce

- Out of ten marks allotted for the term, 5 marks will be allotted for the project report/script /essay etc. and 5 for the viva.
- The Project will be **ONE** small project work to be covered in the Term II. However, the planning for the project by students in consultation with the teachers can begin early.

Schedule:

- Schools are expected to adhere to the timeline specified by the Board for the planning, preparation and viva-voce of ASL based projects.
- The final assessment of the skills is to be done on the basis of parameters suggested by the board. Language teachers, however, have the option to adopt/ modify these parameters according to their school specific requirements.

I. Suggestions for Project Work:

- The Project can be inter-disciplinary in theme. The ideas/issues highlighted in the chapters/ poems/ drama given the prescribed books can also be developed in the form of a project. Students can also take up any relevant and age-appropriate theme.
- Such topics may be taken up that provide students with opportunities for listening and speaking.

Some suggestions are as follows:

a. Interview-Based research:

Example:

- Students can choose a topic on which to do their research/ interview, e.g. a student can choose the topic : “ Evolving food tastes in my neighbourhood” or “Corona pandemic and the fallout on families.” Read the available literature.
- The student then conducts interviews with a few neighbours on the topic. For an interview, with the help of the teacher, student will frame questions based on the preliminary research/background.
- The student will then write an essay/ write up / report etc. up to 1000 words on his/her research and submit it. He / She will then take a viva on the research project. The project can be done in individually or in pairs/ groups

- b.** Listen to podcasts/ interviews/radio or TV documentary on a topic and prepare a report countering or agreeing with the speakers. Write an 800 - 1000 words report and submit. Take a viva on the report.
- c.** Students create their own video/ Audio, after writing a script. Before they decide on a format, the following elements can be taken into consideration:
- Theme/topic of the audio / video. Would the child like to pick a current issue or something artistic like theatre?
 - What are the elements that need to be part of the script?
 - Will the video/audio have an interview with one or more guests?
 - Would they prefer to improvise while chatting with guests, or work from a script?
 - What would be the duration?
 - How would they present the script/report to the teacher, e.g. Can it be in the form of a narrative?
- d. Write, direct and present a theatrical production, /One act play**
This will be a project which will be done as a team. It will involve planning, preparation and presentation. In short, various language skills will be utilised. There will be researching, discussion, writing the script, auditioning and ultimately producing the play. The project will end with a presentation and subsequently a viva. Teachers will be able to assess the core language skills of the students and help them grow as 21st century critical thinkers.

II. Instructions for the Teachers

- 1. Properly orient students about the Project work, as per the present Guidelines.**
- 2. Facilitate the students in the selection of theme and topic.**
- 3. Create a rubric for assessment and share with the students before they start so that they know the parameters of assessment:**
 - Teachers need to familiarize themselves with the method of assessing students with the rubric-- a table with different criteria and a grading scale.
 - Choose the criteria on which you will grade students and list them along the left side of the page.
 - Create an even number of columns along the top of the page. These columns will represent potential skill levels of the students.
 - Assessing students on four/five criteria is an easy way to begin. For each criterion, define the ability that a student would exhibit at each of the levels.
 - The more detailed you make your criteria, the easier it will be to evaluate each student and define the level at which the student is presenting.

{Sample Rubric is attached at the end for reference}

Parameters for Overall Assessment:

1. Pronunciation:

- When evaluating the pronunciation of the students, teachers must listen for clearly articulated words, pronunciation of unusual spellings and intonation.

- Assess the students for the pronunciation skills and determine at which level the student needs improvement.

2. Vocabulary:

- After noting their pronunciation levels, evaluate the students on the use of extensive and appropriate **vocabulary** during the viva. Check if students are using vocabulary appropriate to the context about which they are speaking.

3. Accuracy:

- Grammar has always been an important component of language skills. As students speak/ answer the questions during the viva, listen to their **grammatical structures**. *Are they competent enough to use multiple tenses? Is their word order correct in a given sentence?* An effective speaker will automatically use the correct grammatical structures of his language.

4. Communication:

- Assessing the **communication skills** of the students means looking at more than language. Look at how creatively students use the language to make their points understood. Students with a low level of vocabulary and grammar may still have good communication skills if they are able to make the teacher understand their point of view.

5. Interaction:

- During the viva teachers need to ask the students some questions. Questions need to be based on the projects that have been suggested or chosen by the students.
- It is imperative for a teacher to read the essays/project reports before they can be ready to ask questions.
- Teachers need to observe how students answer the questions that are posed to them: *Are they able to understand and answer questions independently or can they answer only when the questions are translated into simpler words or repeated? Are they able to give appropriate responses in a conversation?*
- These elements of **interaction** are necessary for clear and effective communication. A student with effective interaction skills will be able to answer questions with relative ease and follow the flow of conversation.

6. Fluency:

- Fluency may be the easiest quality to judge in the students' speech: *How comfortable are they as they speak and express themselves? How easily do the words come out? Are there inappropriate pauses and gaps in the way a student speaks?*
- **Fluency** is a judgement of this communication and is an important criterion when evaluating speaking skills. These criteria: pronunciation, vocabulary, accuracy, interaction and fluency are all the hallmarks of a student's overall speaking abilities.
- Teachers must also remember that some **students may excel in one area and struggle in another**. Helping the students understand these issues will enable them to become effective speakers in future. Let your students know that you will be assessing them

in these various areas when you evaluate their progress and encourage them to work and improve in these areas.

- **Finally**, teachers must remember that a proper evaluation of the students will take into consideration **more than just one oral interview on the final ASL** project. Teachers must take note of a student's progress throughout the academic year.

Project-Portfolio/ Project Report

The **Project-Portfolios** is a compilation of the work that the students produce during the process of working on their ALS Project.

The Project-Portfolio may include the following:

- Cover page, with title of project, school details/details of students.
- Statement of purpose/objectives/goals
- Certificate of completion under the guidance of the teacher.
- Action plan for the completion of assigned tasks.
- Materials such as scripts for the theatre/role play, questionnaires for interview, written assignments, essays, survey-reports and other material evidence of learning progress and academic accomplishment.
- The 800-1000 words essay/Script/Report.
- Student/group reflections.
- If possible, Photographs that capture the positive learning experiences of the student(s).
- List of resources/bibliography.

The following points must be kept for consideration while assessing the project portfolios:

- Quality of content of the project
 - Accuracy of information
 - Adherence to the specified timeline
 - Content in respect of (spellings, grammar ,punctuation)
 - Clarity of thoughts and ideas
 - Creativity
 - Contributions by group members
 - Knowledge and experience gained
-

Timeline
The FIVE Steps in Project Plan

PROJECT-INITIATION

PROJECT-PLANNING

EXECUTION

IMPLEMENTATION

CLOSURE

Month	Objectives
<p>Planning and Research for the Project Work</p> <p>Preferably till November-December</p>	<ul style="list-style-type: none"> ● Teachers plan a day to orient students about the ALS projects, details are shared with all stakeholders. ● Students choose a project, select team members and develop project-plan. ● Group meets (preferably online) and reports to the team leader about the progress: shortfalls and successes are detailed. ● Team leader apprises teacher-mentor. ● Students working individually or in pairs also update the teachers. ● A logical, deliverable and practical plan is drafted by the team/pair/individual. Goals/objectives are clearly defined for all. ● Work is delegated to team members by the team leader. Students wishing to work alone develop their own plan of Action. ● Detailed project schedules are shared with the teacher.
<p>December-January</p>	<ul style="list-style-type: none"> ● Suggestions and improvements are shared by the teacher, wherever necessary. ● Group members coordinate and keep communication channels open for interaction. ● Gaps (if any) are filled with the right skill sets by the Team Leader/ individual student.
<p>January-February</p>	<ul style="list-style-type: none"> ● The final draft of the project portfolio/ report is prepared and submitted for evaluation.
<p>January-February</p>	<ul style="list-style-type: none"> ● Students are assessed on their group/pair/individual presentations on allotted days. Final Viva is conducted by the External/Internal examiner.
<p>February-March or as per the timelines given by the Board</p>	<ul style="list-style-type: none"> ● Marks are uploaded on the CBSE website.

**SAMPLE RUBRIC FOR ALS Project Work
(For Theatre/Role Play/Oral presentation/Interview/Podcast)**

CATEGORY	1	2	3	4	5
TIME LIMIT	Presentation is less than or more than 5 minutes long	Presentation exceeded or less than specified time limit by 4 to 5 minutes	Presentation exceeded or less than specified time limit by 3 to 4 minutes	Presentation exceeded or less than specified time limit by 2 to 3 minutes	Student/ group adhered to the given time limit
CONTENT/SCRIPT/ QUESTIONNAIRE	Script is not related to topic or issue	Well written script/ content shows little understanding of parts of topic	Well written script/ content shows good understanding of parts of topic	Well written script/ content shows a good understanding of subject topic	Well written script/ content shows full understanding of subject topic
CREATIVITY	No props/costumes/ stage presentation lack-lustre	Some work done, average stage set- up and costumes	Well organized presentation, could have improved	Logical use of props ,reasonable work done, creative	Suitable props / honest effort seen/ considerable work done/ creative and relevant costumes
PREPAREDNESS	Student /group seems to be unprepared	Some preparedness visible, but rehearsal is lacking	Somewhat prepared, rehearsal is lacking	Good preparedness ,but need better rehearsal	Complete preparedness/ rehearsed presentation
CLARITY OF SPEECH	Lack of clarity in presentation many words mispronounced	Speaks clearly, some words are mispronounced	Speaks clearly 90% of the time/ a few mispronounced words	Speaks clearly and distinctly 95% of time/ few mispronounced words	Speaks clearly distinctly 95% of time/ fluency in pronunciation
USE OF PROPS (Theatre/Role Play)	Only 1/no relevant props used	1 to 2 relevant props used	2 to 3 relevant props used	3 to 4 relevant props used	4 to 5 relevant props used
EXPRESSION/ BODY LANGUAGE	Very little use of facial expressions/ body language, does not generate much interest	Little Use of facial expressions and body language	Facial expressions and body language are used to try to generate some enthusiasm	Facial expression and body language sometimes generate strong enthusiasm with the topic	Facial expression and body language generate strong enthusiasm with the topic
PORTFOLIO- PRESENTATION	Inadequate & unimpressive	Somewhat suitable & convincing	Adequate & relevant	Interesting, enjoyable & relevant	Brilliant, creative & exceptional

PHYSICS XI (Code No. 042) COURSE STRUCTURE
Class XI (Theory) Term 1

Time: one and half hours.

Max Marks: 35

		No. of Periods	Marks
Unit-I	Physical World and Measurement	6	20
	Chapter-1: Physical World		
	Chapter-2: Units and Measurements		
Unit-II	Kinematics	16	
	Chapter-3: Motion in a Straight Line		
	Chapter-4: Motion in a Plane		
Unit-III	Laws of Motion	10	
	Chapter-5: Laws of Motion		
Unit-IV	Work, Energy and Power	12	15
	Chapter-6: Work, Energy and Power		
Unit-V	Motion of System of Particles and Rigid Body	16	
	Chapter-7: System of Particles and Rotational Motion		
Unit-VI	Gravitation	8	
	Chapter-8: Gravitation		
Total		68	35

Syllabus assigned for first term

Unit I: Physical World and Measurement

6 Periods

Chapter-1: Physical World

Physics-scope and excitement; nature of physical laws; Physics, technology and society. (To be discussed as a part of Introduction and integrated with other topics)

Chapter-2: Units and Measurements

Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures.

Dimensions of physical quantities, dimensional analysis and its applications.

Unit II: Kinematics

16 Periods

Chapter-3: Motion in a Straight Line

Elementary concepts of differentiation and integration for describing motion, uniform and non-uniform motion, average speed and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs.

Relations for uniformly accelerated motion (graphical treatment).

Chapter-4: Motion in a Plane

Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors,

relative velocity, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors.

Motion in a plane, cases of uniform velocity and uniform acceleration-projectile motion, uniform circular motion.

Unit III: Laws of Motion

10 Periods

Chapter–5: Laws of Motion

Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. (Recapitulation only)

Law of conservation of linear momentum and its applications.

Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication.

Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).

Unit IV: Work, Energy and Power

12 Periods

Chapter–6: Work, Energy and Power

Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power.

Notion of potential energy, potential energy of a spring, conservative forces: conservation of mechanical energy (kinetic and potential energies); non-conservative forces: motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.

Unit V: Motion of System of Particles and Rigid Body

16 Periods

Chapter–7: System of Particles and Rotational Motion

Centre of mass of a two-particle system, momentum conservation and centre of mass motion.

Centre of mass of a rigid body; centre of mass of a uniform rod.

Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications.

Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions.

Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation).

Unit VI: Gravitation

8 Periods

Chapter–8: Gravitation

Universal law of gravitation. Acceleration due to gravity (recapitulation only) and its variation with altitude and depth.

Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite, Geo-stationary satellites.

Class XI (Theory) Term II

Time: 2hrs

Max Marks: 35

Unit		Periods	Marks
Unit-VII	Properties of Bulk Matter	22	23
	Chapter-9: Mechanical Properties of Solids		
	Chapter-10: Mechanical Properties of Fluids		
	Chapter-11: Thermal Properties of Matter		
Unit-VIII	Thermodynamics	10	
	Chapter-12: Thermodynamics		
Unit-IX	Behaviour of Perfect Gases and Kinetic Theory of Gases	08	
	Chapter-13: Kinetic Theory		
Unit-X	Oscillations and Waves	23	12
	Chapter-14: Oscillations		
	Chapter-15: Waves		
	Total Marks	63	35

Syllabus assigned for Term II

Unit VII: Properties of Bulk Matter

22 Periods

Chapter-9: Mechanical Properties of Solids

Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus

Chapter-10: Mechanical Properties of Fluids

Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure.

Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its applications.

Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.

Chapter-11: Thermal Properties of Matter

Heat, temperature, (recapitulation only) thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; C_p , C_v - calorimetry; change of state - latent heat capacity.

Heat transfer-conduction, convection and radiation (recapitulation only), thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law, Greenhouse effect.

Unit VIII: Thermodynamics**10 Periods****Chapter–12: Thermodynamics**

Thermal equilibrium and definition of temperature (zeroth law of thermodynamics), heat, work and internal energy. First law of thermodynamics, isothermal and adiabatic processes.

Second law of thermodynamics: reversible and irreversible processes

Unit IX: Behaviour of Perfect Gases and Kinetic Theory of Gases**08 Periods****Chapter–13: Kinetic Theory**

Equation of state of a perfect gas, work done in compressing a gas.

Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.

Unit X: Oscillations and Waves**23 Periods****Chapter–14: Oscillations**

Periodic motion - time period, frequency, displacement as a function of time, periodic functions.

Simple harmonic motion (S.H.M) and its equation; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression for its time period. Free, forced and damped oscillations (qualitative ideas only), resonance.

Chapter–15: Waves

Wave motion: Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, Beats

PRACTICALS

Syllabus for TERM I

Total Periods: 16

The record, to be submitted by the students, at the time of their First term examination, has to include:

Record of at least 4 Experiments, to be performed by the students

Record of at least 3 Activities [with 3 each from section A and section B], to be demonstrated by teacher.

Time Allowed: One and half hours

Max. Marks: 30

Two experiments one from each section	8Marks
Practical record (experiment and activities)	2Marks
Viva on experiments, and activities	5 Marks
Total	15 Marks

Syllabus assigned for Practical Term I

Experiments

1. To measure diameter of a small spherical/cylindrical body and to measure internal diameter and depth of a given beaker/calorimeter using Vernier Calipers and hence find its volume.
2. To measure diameter of a given wire and thickness of a given sheet using screw gauge.

OR

- To determine volume of an irregular lamina using screw gauge.
3. To determine radius of curvature of a given spherical surface by a spherometer.
 4. To determine the mass of two different objects using a beam balance.
 5. To find the weight of a given body using parallelogram law of vectors.
 6. Using a simple pendulum, plot its $L-T^2$ graph and use it to find the effective length of second's pendulum.

OR

- To study variation of time period of a simple pendulum of a given length by taking bobs of same size but different masses and interpret the result.
7. To study the relationship between force of limiting friction and normal reaction and to find the co-efficient of friction between a block and a horizontal surface.

OR

To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination θ by plotting graph between

force and $\sin \theta$.

Activities

1. To make a paper scale of given least count, e.g., 0.2cm, 0.5 cm.
2. To determine mass of a given body using a metre scale by principle of moments.
3. To plot a graph for a given set of data, with proper choice of scales and error bars.
4. To measure the force of limiting friction for rolling of a roller on a horizontal plane.
5. To study the variation in range of a projectile with angle of projection.
6. To study the conservation of energy of a ball rolling down on an inclined plane (using a double inclined plane).
7. To study dissipation of energy of a simple pendulum by plotting a graph between square of amplitude and time.

Class XI Syllabus for TERM II

Total Periods: 16

The record, to be submitted by the students, at the time of their annual examination, has to include:

Record of at least 4 Experiments, to be performed by the students

Record of at least 3 Activities [with 3 each from section A and section B], to be demonstrated by teacher.

Time Allowed: One and half hours

Max. Marks: 30

Two experiments one from each section	8Marks
Practical record (experiment and activities)	2Marks
Viva on experiments, and activities	5 Marks
Total	15 Marks

Experiments

1. To determine Young's modulus of elasticity of the material of a given wire.

OR

To find the force constant of a helical spring by plotting a graph between load and extension.

2. To study the variation in volume with pressure for a sample of air at constant temperature by plotting graphs between P and V, and between P and $1/V$.
3. To determine the surface tension of water by capillary rise method.

OR

To determine the coefficient of viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.

4. To study the relationship between the temperature of a hot body and time by plotting a cooling curve.
5. To determine specific heat capacity of a given solid by method of mixtures.
6. To study the relation between frequency and length of a given wire under constant tension using sonometer.

OR

To study the relation between the length of a given wire and tension for constant frequency using sonometer.

7. To find the speed of sound in air at room temperature using a resonance tube by two resonance positions.

Activities

1. To observe change of state and plot a cooling curve for molten wax.
2. To observe and explain the effect of heating on a bi-metallic strip.
3. To note the change in level of liquid in a container on heating and interpret the observations.
4. To study the effect of detergent on surface tension of water by observing capillary rise.
5. To study the factors affecting the rate of loss of heat of a liquid.
6. To study the effect of load on depression of a suitably clamped metre scale loaded at (i) its end (ii) in the middle.
7. To observe the decrease in pressure with increase in velocity of a fluid.

Practical Examination for Visually Impaired Students Class XI

Note: Same Evaluation scheme and general guidelines for visually impaired students as given for Class XII may be followed.

A. Items for Identification/Familiarity of the apparatus for assessment in practicals (All experiments)

Spherical ball, Cylindrical objects, vernier calipers, beaker, calorimeter, Screw gauge, wire, Beam balance, spring balance, weight box, gram and milligram weights, forceps, Parallelogram law of vectors apparatus, pulleys and pans used in the same 'weights' used, Bob and string used in a simple pendulum, meter scale, split cork, suspension arrangement, stop clock/stop watch, Helical spring, suspension arrangement used, weights, arrangement used for measuring extension, Sonometer, Wedges, pan and pulley used in it, 'weights' Tuning Fork, Meter scale, Beam balance, Weight box, gram and milligram weights, forceps, Resonance Tube, Tuning Fork, Meter scale, Flask/Beaker used for adding water.

B. List of Practical's

1. To measure diameter of a small spherical/cylindrical body using vernier calipers.
2. To measure the internal diameter and depth of a given beaker/calorimeter using vernier calipers and hence find its volume.
3. To measure diameter of given wire using screw gauge.
4. To measure thickness of a given sheet using screw gauge.
5. To determine the mass of a given object using a beam balance.
6. To find the weight of given body using the parallelogram law of vectors.
7. Using a simple pendulum plot L-T and L-T² graphs. Hence find the effective length of second's pendulum using appropriate length values.
8. To find the force constant of given helical spring by plotting a graph between load and extension.
9. (i) To study the relation between frequency and length of a given wire under constant tension using a sonometer.
(ii) To study the relation between the length of a given wire and tension, for constant frequency, using a sonometer.
10. To find the speed of sound in air, at room temperature, using a resonance tube, by observing the two resonance positions.

Note: The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Physics Part-I, Textbook for Class XI, Published by NCERT
2. Physics Part-II, Textbook for Class XI, Published by NCERT
3. Laboratory Manual of Physics, Class XI Published by NCERT
4. The list of other related books and manuals brought out by NCERT
(consider multimedia also).

Physics Class XII (Code N. 042) (2020-21)
Syllabus assigned for Term I (Theory)

Time: 90 Minutes

Max Marks: 35

		No. of Periods	Marks
Unit-I	Electrostatics	23	17
	Chapter-1: Electric Charges and Fields		
	Chapter-2: Electrostatic Potential and Capacitance		
Unit-II	Current Electricity	15	18
	Chapter-3: Current Electricity		
Unit-III	Magnetic Effects of Current and Magnetism	16	
	Chapter-4: Moving Charges and Magnetism		
	Chapter-5: Magnetism and Matter		
Unit-IV	Electromagnetic Induction and Alternating Currents	19	
	Chapter-6: Electromagnetic Induction		
	Chapter 7: Alternating currents		
Total		73	35

Unit I: Electrostatics

23 Periods

Chapter-1: Electric Charges and Fields

Electric Charges; Conservation of charge, Coulomb's law-force between two-point charges, forces between multiple charges; superposition principle and continuous charge distribution. Electric field, electric field due to a point charge, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field. Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet

Chapter-2: Electrostatic Potential and Capacitance

Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two-point charges and of electric dipole in an electrostatic field. Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor.

Unit II: Current Electricity

15 Periods

Chapter–3: Current Electricity

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity; temperature dependence of resistance. Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel, Kirchhoff's laws and simple applications, Wheatstone bridge, metre bridge(**qualitative ideas only**). Potentiometer - principle and its applications to measure potential difference and for comparing EMF of two cells; measurement of internal resistance of a cell (**qualitative ideas only**)

Unit III: Magnetic Effects of Current and Magnetism

16 Periods

Chapter–4: Moving Charges and Magnetism

Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long straight wire. Straight and toroidal solenoids (only qualitative treatment), force on a moving charge in uniform magnetic and electric fields. Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying conductors-definition of ampere, torque experienced by a current loop in uniform magnetic field; moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.

Chapter–5: Magnetism and Matter

Current loop as a magnetic dipole and its magnetic dipole moment, magnetic dipole moment of a revolving electron, bar magnet as an equivalent solenoid, magnetic field lines; earth's magnetic field and magnetic elements.

Unit IV: Electromagnetic Induction and Alternating Currents

19 Periods

Chapter–6: Electromagnetic Induction

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Eddy currents. Self and mutual induction.

Chapter–7: Alternating Current

Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits. AC generator and transformer.

Syllabus assigned for Practical for Term I

Total Periods:16

First term practical examination will be organised by schools as per the directions of CBSE. The record to be submitted by the students at the time of first term examination has to include a record of at least 4 Experiments and 3 Activities to be demonstrated by teacher.

Time Allowed: one and half hours

Max. Marks: 15

Two experiments to be performed by students at time of examination	8 marks
Practical record [experiments and activities]	2 marks
Viva on experiments, and activities	5 marks
Total	15 marks

Experiments assigned for Term I

1. To determine resistivity of two / three wires by plotting a graph between potential difference versus current.
2. To find resistance of a given wire / standard resistor using metre bridge.

OR

To verify the laws of combination (series) of resistances using a metre bridge.

OR

To verify the laws of combination (parallel) of resistances using a metre bridge.

3. To compare the EMF of two given primary cells using potentiometer.

OR

To determine the internal resistance of given primary cell using potentiometer.

4. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
5. To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify the same.

OR

To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.

6. To find the frequency of AC mains with a sonometer.

Activities assigned for Term I

1. To measure the resistance and impedance of an inductor with or without iron core.
2. To measure resistance, voltage (AC/DC), current (AC) and check continuity of a given circuit using multimeter.
3. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
4. To assemble the components of a given electrical circuit.
5. To study the variation in potential drop with length of a wire for a steady current.
6. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.

Class XII Syllabus assigned for Term II (Theory)

Time: 2 Hours

Max Marks: 35

		No of Periods	Marks
Unit–V	Electromagnetic Waves	02	17
	Chapter–8: Electromagnetic Waves		
Unit–VI	Optics	18	
	Chapter–9: Ray Optics and Optical Instruments		
	Chapter–10: Wave Optics		
Unit–VII	Dual Nature of Radiation and Matter	07	
	Chapter–11: Dual Nature of Radiation and Matter		
Unit–VIII	Atoms and Nuclei	11	
	Chapter–12: Atoms		
	Chapter–13: Nuclei		
Unit–IX	Electronic Devices	07	7
	Chapter–14: Semiconductor -Electronics: Materials, Devices and Simple Circuits		
Total		45	35

Unit V: Electromagnetic waves

2 Periods

Chapter–8: Electromagnetic Waves

Electromagnetic waves, their characteristics, their Transverse nature (qualitative ideas only).

Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

Unit VI: Optics

18Periods

Chapter–9: Ray Optics and Optical Instruments

Ray Optics: Refraction of light, total internal reflection and its applications, optical fibers, refraction at spherical surfaces, lenses, thin lens formula, lensmaker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism.

Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Chapter–10: Wave Optics

Wave optics: Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width, coherent sources and

sustained interference of light, diffraction due to a single slit, width of central maximum

Unit VII: Dual Nature of Radiation and Matter

7 Periods

Chapter–11: Dual Nature of Radiation and Matter

Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light.

Experimental study of photoelectric effect

Matter waves-wave nature of particles, de-Broglie relation

Unit VIII: Atoms and Nuclei

11Periods

Chapter–12: Atoms

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum.

Chapter–13: Nuclei Composition and size of nucleus Nuclear force Mass-energy relation, mass defect, nuclear fission, nuclear fusion.

Unit IX: Electronic Devices

7 Periods

Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Semiconductor diode - I-V characteristics in forward and reverse bias, diode as a rectifier; Special purpose p-n junction diodes: LED, photodiode, solar cell.

Syllabus assigned for Practical for Term II

Total Periods: 16

The second term practical examination will be organised by schools as per the directions of CBSE and viva will be taken by both internal and external observers. The record to be submitted by the students at the time of second term examination has to include a record of at least 4 Experiments and 3 Activities to be demonstrated by teacher.

Evaluation Scheme

Time Allowed: one and half hours

Max. Marks: 15

Two experiments to be performed by students at time of examination	8 marks
Practical record [experiments and activities]	2 marks
Viva on experiments, and activities	5 marks
Total	15 marks

Experiments assigned for Term-II

1. To find the focal length of a convex lens by plotting graphs between u and v or between $1/u$ and $1/v$.
2. To find the focal length of a convex mirror, using a convex lens.

OR

To find the focal length of a concave lens, using a convex lens.

3. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.
4. To determine refractive index of a glass slab using a travelling microscope.
5. To find refractive index of a liquid by using convex lens and plane mirror.
6. To draw the I-V characteristic curve for a p-n junction diode in forward bias and reverse bias.

Activities assigned for Term-II

1. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items.
2. Use of multimeter to see the unidirectional flow of current in case of a diode and an LED and check whether a given electronic component (e.g., diode) is in working order.
3. To study effect of intensity of light (by varying distance of the source) on an LDR.
4. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
5. To observe polarization of light using two Polaroids.
6. To observe diffraction of light due to a thin slit.
7. To study the nature and size of the image formed by a (i) convex lens, (ii) concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror).
8. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

Practical Examination for Visually Impaired Students of XII Evaluation Scheme (Term I and Term II)

Time Allowed: one hour

Max. Marks:15

Identification/Familiarity with the apparatus	3 marks
Written test (based on given/prescribed practicals)	5 marks
Practical Record	2 marks
Viva	5 marks
Total	15 marks

General Guidelines

- The practical examination will be of one hour duration.
- A separate list of ten experiments is included here.
- The written examination in practicals for these students will be conducted at the time of practical examination of all other students.
- The written test will be of 10 minutes duration.
- The question paper given to the students should be legibly typed. It should contain a total of 8 practical skill based very short answer type questions. A student would be required to answer any 5 questions.
- A writer may be allowed to such students as per CBSE examination rules.
- All questions included in the question papers should be related to the listed practicals. Every question should require about two minutes to be answered.
- These students are also required to maintain a practical file. A student is expected to record at least five of the listed experiments as per the specific instructions for each subject. These practicals should be duly checked and signed by the internal examiner.
- The format of writing any experiment in the practical file should include aim, apparatus required, simple theory, procedure, related practical skills, precautions etc.
- Questions may be generated jointly by the external/internal examiners and used for assessment.
- The viva questions may include questions based on basic theory/principle/concept, apparatus/ materials/chemicals required, procedure, precautions, sources of error

Class XII

A. Items for Identification/ familiarity with the apparatus for assessment in practicals (All experiments)

Meter scale, general shape of the voltmeter/ammeter, battery/power supply, connecting wires, standard resistances, connecting wires, voltmeter/ammeter, meter bridge, screw gauge, jockey Galvanometer, Resistance Box, standard Resistance, connecting wires, Potentiometer, jockey, Galvanometer, Leclanche cell, Daniell cell [simple distinction between the two vis-à-vis their outer (glass and copper) containers], rheostat connecting wires, Galvanometer, resistance box, Plug-in and tapping keys, connecting wires battery/power supply, Diode, Resistor (Wire-wound or carbon ones with two wires connected to two ends), capacitors (one or two types), Inductors, Simple electric/electronic bell, battery/power supply, Plug-in and tapping keys, Convex lens, concave lens, convex mirror, concave mirror, Core/hollow wooden cylinder, insulated wire, ferromagnetic rod, Transformer core, insulated wire.

Experiments assigned for Term-I

1. To determine the resistance per cm of a given wire by plotting a graph between voltage and current.
2. To verify the laws of combination (series/parallel combination) of resistances by Ohm's law.
3. To find the resistance of a given wire / standard resistor using a meter bridge.
4. To compare the e.m.f of two given primary cells using a potentiometer.
5. To determine the resistance of a galvanometer by half deflection method.

Experiments assigned for Term-II

- 1 To identify a resistor, capacitor, inductor and diode from a mixed collection of such items.
- 2 To observe the difference between
 - i. a convex lens and a concave lens
 - ii. a convex mirror and a concave mirror and to estimate the likely difference between the power of two given convex /concave lenses.
- 3 To design an inductor coil and to know the effect of
 - i. change in the number of turns
 - ii. Introduction of ferromagnetic material as its core material on the inductance of the coil.
- 4 To design a (i) step up (ii) step down transformer on a given core and know the relation between its input and output voltages.

Note: The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Physics, Class XII, Part -I and II, Published by NCERT.
2. Laboratory Manual of Physics for class XII Published by NCERT.
3. The list of other related books and manuals brought out by NCERT (consider multimedia also).

CHEMISTRY (043)

SYLLABUS FOR SESSION 2021-22 CLASS XI Term-I

S	UNIT	Periods	Marks
1	Some Basic Concepts of Chemistry	10	11
2	Structure of Atom	12	
3	Classification of Elements and Periodicity in Properties	6	4
4	Chemical Bonding and Molecular Structure	14	6
5	Redox Reactions	4	5
6	Hydrogen	4	
7	Organic Chemistry: Some basic Principles and Techniques	10	9
	TOTAL	60	35

Some Basic Concepts of Chemistry: General Introduction: Importance and scope of Chemistry. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.

Structure of Atom: Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals

Classification of Elements and Periodicity in Properties: Modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.

Chemical Bonding and Molecular Structure:

Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules(qualitative idea only), Hydrogen bond.

Redox Reactions:

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number.

Hydrogen: Position of hydrogen in periodic table, occurrence, isotopes, hydrides-ionic covalent and interstitial; physical and chemical properties of water, heavy water, hydrogen as a fuel

Organic Chemistry: Some basic Principles and Techniques: General introduction, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.

PRACTICALS

Term I: A 15-mark Practical would be conducted under the supervision of subject teacher. This would contribute to the overall practical marks for the subject.

OR

In case the situation of lockdown continues until Nov-Dec 2021, a *Practical Based Assessment (pen-paper)* of 15 marks would be conducted at the end of Term I.

Term-I Evaluation Scheme

S. No	Practical	Marks
1.	Volumetric Analysis	8
2.	Content Based experiment	2
3.	Class record and viva (Internal Examiner)	5
TOTAL		15

Micro-chemical methods are available for several of the practical experiments, wherever possible such techniques should be used.

A. Basic Laboratory Techniques

1. Cutting glass tube and glass rod
2. Bending a glass tube
3. Drawing out a glass jet
4. Boring a cork

B. Characterization of Chemical Substances (2 Marks)

1. Determination of melting point of an organic compound.
2. Determination of boiling point of an organic compound.

C. Quantitative Estimation (8 marks)

- i. Using a mechanical balance/electronic balance.
- ii. Preparation of standard solution of Oxalic acid.
- iii. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.
- iv. Preparation of standard solution of Sodium carbonate.
- v. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution.

SYLLABUS FOR SESSION 2021-22 CLASS XI Term-II

S.No	UNIT	Periods	Marks
1	States of Matter: Gases and Liquids	9	15
2	Chemical Thermodynamics	14	
3	Equilibrium	12	
4	s -Block Elements	5	11
5	Some p -Block Elements	9	
6	Hydrocarbons	10	9
	TOTAL	59	35

States of Matter: Gases and Liquids: Three states of matter, intermolecular interactions, types of bonding, melting and boiling points, role of gas laws in elucidating the concept of the molecule, Boyle's law, Charles law, Gay Lussac's law, Avogadro's law, ideal behaviour, empirical derivation of gas equation, Avogadro's number, ideal gas equation and deviation from ideal behaviour.

Chemical Thermodynamics: Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions.

First law of thermodynamics -internal energy and enthalpy, measurement of ΔU and ΔH , Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction)

Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes.

Third law of thermodynamics (brief introduction).

Equilibrium: Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, buffer solution, solubility product, common ion effect (with illustrative examples).

s -Block Elements: Group 1 and Group 2 Elements -General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen, water, hydrogen and halogens, uses.

Some p -Block Elements: General Introduction to p -Block Elements

Group 13 Elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group, Boron - physical and chemical properties.

Group 14 Elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first elements. Carbon-catenation, allotropic forms, physical and chemical properties.

Hydrocarbons: Classification of Hydrocarbons Aliphatic Hydrocarbons:

Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions.

Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.

Alkynes - Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water.

Aromatic Hydrocarbons: Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in monosubstituted benzene. Carcinogenicity and toxicity.

PRACTICALS

Term II: At the end of Term II, a **15-mark Practical** would be conducted under the supervision of subject teacher. This would contribute to the overall practical marks for the subject.

OR

In case the situation of lockdown continues beyond December 2021, a *Practical Based Assessment (pen-paper) of 10 marks and Viva 5 marks* would be conducted at the end of Term II by the subject teacher. This would contribute to the overall practical marks for the subject.

TERM-II Evaluation Scheme

S. No	Practical	Marks
1.	Salt Analysis	8
2.	Content Based Experiment	2
3	Project Work and Viva(Internal)	5
TOTAL		15

A. Qualitative Analysis(Marks 8)

a. Determination of one anion and one cation in a given salt

Cations- Pb^{2+} , Cu^{2+} , As^{3+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Ni^{2+} , Zn^{2+} , Co^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , NH_4^+

Anions – $(\text{CO}_3)^{2-}$, S^{2-} , NO_2^- , SO_3^{2-} , SO_4^{2-} , NO_3^- , Cl^- , Br^- , I^- , PO_4^{3-} , $\text{C}_2\text{O}_4^{2-}$, CH_3COO^- (Note: Insoluble salts excluded)

b. Detection of -Nitrogen, Sulphur, Chlorine in organic compounds.

B. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid. (Marks 2)

PROJECTS scientific investigations involving laboratory testing and collecting information from other sources.

Guidelines on Syllabus for Visually Handicapped students.

Schools are expected to rationalise and divide the syllabus of practicums for visually handicapped students into two halves on the basis of collective guidelines given for the same in the complete syllabus and as per the convenience of their students. This flexibility is given in view of the special

condition of visually handicapped students .They will, however, be assessed on 15 marks in practical examination in both the terms as rest of their peers.

SYLLABUS FOR SESSION 2021-22 CLASS XII Term-I

S.No	UNIT	Periods	MARKS
1	Solid State	8	10
2	Solutions	8	
3	p-Block Elements	7	10
4	Haloalkanes and Haloarenes	9	15
5	Alcohols, Phenols and Ethers	9	
6	Biomolecules	8	
	TOTAL	49	35

Solid State: Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea). Unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, packing efficiency, voids, number of atoms per unit cell in a cubic unit cell, point defects.

Solutions: Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties.

p Block Elements: Group -15 Elements: General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; Nitrogen preparation properties and uses; compounds of Nitrogen: preparation and properties of Ammonia and Nitric Acid.

Group 16 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties, dioxygen: preparation, properties and uses, classification of Oxides, Ozone, Sulphur -allotropic forms; compounds of Sulphur: preparation properties and uses of Sulphur-dioxide, Sulphuric Acid: properties and uses; Oxoacids of Sulphur (Structures only).

Group 17 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens, Preparation, properties and uses of Chlorine and Hydrochloric acid, interhalogen compounds, Oxoacids of halogens (structures only).

Group 18 Elements: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.

Haloalkanes and Haloarenes: Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions.

Haloarenes: Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only).

Alcohols, Phenols and Ethers: Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration.

Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.

Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.

Biomolecules: Carbohydrates - Classification (aldoses and ketoses), monosaccharides (glucose and fructose), D-L configuration

Proteins -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins.

Nucleic Acids: DNA and RNA

PRACTICALS

Term I: A 15-mark Practical would be conducted under the supervision of subject teacher/ internal examiner. This would contribute to the overall practical marks for the subject.

OR

In case the situation of lockdown continues until Nov-Dec 2021, a *Practical Based Assessment (pen-paper) of 15 marks* would be conducted at the end of Term I at the school level and marks would be submitted by the schools to the Board. This would contribute to the overall practical marks for the subject.

Term-I Evaluation Scheme

S. No	Practical	Marks
1.	Volumetric Analysis	4
2.	Salt Analysis	4
3.	Content Based experiment	2
4.	Class record and viva (Internal Examiner)	5
	TOTAL	15

(1) Volumetric analysis (4 marks)

Determination of concentration/ molarity of KMnO_4 solution by titrating it against a standard solution of:

- Oxalic acid,
- Ferrous Ammonium Sulphate

(Students will be required to prepare standard solutions by weighing themselves).

(2) Salt analysis (Qualitative analysis) (4 marks)

Determination of one cation and one anion in a given salt.

Cations- Pb^{2+} , Cu^{2+} , As^{3+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Ni^{2+} , Zn^{2+} , Co^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , NH_4^+

Anions – $(\text{CO}_3)^{2-}$, S^{2-} , NO_2^- , SO_3^{2-} , SO_4^{2-} , NO_3^- , Cl^- , Br^- , I^- , PO_4^{3-} , $\text{C}_2\text{O}_4^{2-}$, CH_3COO^- (Note:

Insoluble salts excluded)

(3) Content Based Experiments (2 marks)

A. Chromatography

- Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of R_f values.
- Separation of constituents present in an inorganic mixture containing two cations only (constituents having large difference in R_f values to be provided).

B. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.

SYLLABUS FOR SESSION 2021-22 CLASS XII Term-II

S.No	UNIT	No. of Periods	MARKS
1	Electrochemistry	7	13
2	Chemical Kinetics	5	
3	Surface Chemistry	5	
4	d-and f-Block Elements	7	9
5	Coordination Compounds	8	
6	Aldehydes, Ketones and Carboxylic Acids	10	13
7	Amines	7	
	TOTAL	49	35

Electrochemistry: Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis.

Chemical Kinetics: Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions).

Surface Chemistry: Adsorption - physisorption and chemisorption, factors affecting adsorption of gases on solids, colloidal state: distinction between true solutions, colloids and suspension; lyophilic, lyophobic, multi-molecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation.

d-and f-Block Elements: General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation.

Lanthanoids - Electronic configuration, oxidation states and lanthanoid contraction and its consequences.

Coordination Compounds: Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT.

Aldehydes, Ketones and Carboxylic Acids: Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses.

Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Amines:

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.

PRACTICALS

Term II: At the end of Term II, a **15-mark Practical** would be conducted under the supervision of Board appointed external examiners. This would contribute to the overall practical marks for the subject.

OR

In case the situation of lockdown continues beyond December 2021, a *Practical Based Assessment (pen-paper) of 10 marks and Viva 5 marks* would be conducted at the end of Term II jointly by the external and internal examiners and marks would be submitted by the schools to the Board. This would contribute to the overall practical marks for the subject.

TERM-II Evaluation Scheme

S. No	Practical	Marks
1.	Volumetric Analysis	4
2.	Salt Analysis	4
3	Content Based Experiment	2
4	Project Work and Viva(Internal and External Both)	5
	TOTAL	15

1) Volumetric analysis (4 marks)

Determination of concentration/ molarity of KMnO_4 solution by titrating it against a standard solution of:

- Oxalic acid,
- Ferrous Ammonium Sulphate

(Students will be required to prepare standard solutions by weighing themselves).

2) Salt analysis (Qualitative analysis) (4 marks)

Determination of one cation and one anion in a given salt.

Cations- Pb^{2+} , Cu^{2+} , As^{3+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Ni^{2+} , Zn^{2+} , Co^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , NH_4^+

Anions – $(\text{CO}_3)^{2-}$, S^{2-} , NO_2^- , SO_3^{2-} , SO_4^{2-} , NO_3^- , Cl^- , Br^- , I^- , PO_4^{3-} , $\text{C}_2\text{O}_4^{2-}$, CH_3COO^- (Note: Insoluble salts excluded)

3) Content based experiment

- Preparation of Inorganic Compounds
Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.
Preparation of Potassium Ferric Oxalate.
- Tests for the functional groups present in organic compounds:
Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

Guidelines on Syllabus for Visually Handicapped students.

Schools are expected to rationalise and divide the syllabus of practicums for visually handicapped students into two halves on the basis of collective guidelines given for the same in the complete syllabus and as per the convenience of their students. This flexibility is given in view of the special condition of visually handicapped students. They will, however, be assessed on 15 marks in practical examination in both the terms as rest of their peers.

General Instructions for Investigatory Project

In Chemistry the students of class XI and XII are supposed to conduct a scientific investigations involving laboratory testing and collecting information from other sources. This project is assessed as a part of practical examination at the end of year.

At the outset, teachers must map appropriate competencies or learning outcomes with real world problems (projects) that are age appropriate for their students. Students in consultation with their teacher finally determine the project question for them depending upon their interest and proclivity. A project should ideally arise out of the need felt by the student. Students explore their areas of interest and narrow down their ideas to a testable hypothesis or problem question.

For example: Abdul waits for summers as his favourite fruit watermelon is available in plenty. This year he noticed that every time he bought a watermelon its colour was dark red and was exceptionally sweet from inside. This never happened in earlier years. Some watermelons would be sweet some would not. Abdul were surprised by this observation and worried if the fruit was adulterated. He thought of conducting a test to find out if fruits and vegetables available in his locality were adulterated. He reviewed articles and papers on adulteration and found out simple tests to check adulteration at home. Abdul conducted the test and shared his results with his friend and teacher. He developed a small manual to help other check adulteration in fruits.

There are many issues in our immediate surroundings which need to be addressed. Keen observation will help identify the problem.

Before developing a problem question, students must do research on topics and find out what other people have already done in the selected area to avoid repetition. During this phase, students should be encouraged to record the reference of every bit of information they got from different sources. After developing problem question, students should write down precise testable hypothesis and design an experiment or procedure to test their hypothesis by collecting and analysing the data followed by writing conclusion and limitation of the study. Students must also develop a timeline and checklist about accessibility to resources required, safety of experiment/procedure, harmlessness of experiments to environment, organisms and other people. Teacher must ensure that it is doable within a specified period of time and available resources and is appropriately challenging to a particular student (neither be very complex or longer nor be very easy and short). It should not culminate into finding information from a book or website.

A project could have the following outline:

1. **Statement of Problem-** A clear statement of the problem/need that has given rise to the project
2. **Objectives-**General and specific objectives of topic

3. **Introduction**-The introduction should describe the relevance of problem or why the problem is the most appropriate for your inquiry. It should also describe previously known facts about your problem question with proper bibliography. Introduction towards end briefly includes hypothesis your hypothesis and the method to test it.
4. **Problem question** (specific, concrete questions to which concrete answers can be given) and/ or hypotheses
5. **Methods/Procedures** Methodology (will your research be based on survey, an experimental investigation, historical study, ethnographic study or content analysis).Methods describe the experiments proposed or the observations planned to make and the detailed process of analysis of data/observations. Methods proposed should be feasible and be able to adequately answer problem question.
6. **Materials/Resources required**
7. **Observations/Data gathered**
Using the procedures mentioned in introduction, experiments should be conducted and data should be recorded. Interesting things that happened during the conduct of experiments should also be recorded.
8. **Analysis of data and discussion of result**
Data should be interpreted in terms of proposed hypothesis. Data should be tabulated and interpreted with the help of graphs if possible. The interpretation should be done in an honest manner even if it does not support proposed hypothesis.
9. **Conclusion** Reporting and writing up the report
Discussion of new learning from the study may be covered under conclusion. This may have possible suggestions for future studies.
10. **Limitation of the study**
The limitations of the study are those features of design or procedure that might have affected the interpretation of the results of study. The limitations are alternatively interpreted as flaws or shortcomings due to flawed methodology, observations, small number of experiments or non-peer reviewed nature of study etc.
11. **Bibliography**

Rubric for Assessment of Project

PARAMETER	Exemplary (4)	Accomplished (3)	Developing (2)	Beginner (1)
Factual information	Content covers the research well	Content from all eras but has few inaccuracies	Content does not cover all eras and has few inaccuracies	Content does not cover all eras and is historically inaccurate
Sources	Multiple sources (6 or more) used (library, books, interview with people, different websites, blogs etc.)	Many sources (4-5) used (Books, websites, blogs)	Few sources used (2-3)	Relied on only one source
Data collection	Collected data from a large random sample (50 people or more from different age group, gender, social status) OR collected data for different samples and at least 5 reading for each set of experiment	Collected data from a fairly large random sample (30 -50 people from different age group, gender, social status) OR collected data for different samples and 3 reading for each set of experiment	Collected data from a small random sample (20 people from different age group, gender, social status) OR collected data for one sample and 3-5 readings	Collected data from a small sample (10 or less people) OR collected data for one sample and 1-2 readings
Interpretations and conclusion	In correlation with data and aim of the project. Clear conclusions based on findings	In correlation with data and aim of the project. Conclusions not based on findings	Not in correlation with data but in correlation with the aim Random conclusions	Not in correlation with data and aim, No conclusions
Journal	Daily entries with details of discussions and brainstorming sessions with the teacher.	Most of the entries done with details of discussions with the teacher	Daily entries without details	Random entries
Project report	Exceptionally attractive, organized sequentially and logically, creatively presented with data and clear conclusions	Attractive, organized sequentially and logically, presented some data and conclusions	Information is organized sequentially and logically but not in an attractive manner. Random Data without conclusions	Presentation is confusing. There is no sequence.
Academic Honesty	Sites all sources and gives due credits	Most of the sources cited	Few sources cited	Uses other people's ideas without giving credit

BIOLOGY

(Code No. 044)

Syllabus for Purpose of Examination 2021-22

CLASS – XI and XII (2021-22)

The present curriculum provides the students with updated concepts along with an extended exposure to contemporary areas of the subject. The curriculum also aims at emphasizing the underlying principles that are common to animals, plants and microorganisms as well as highlighting the relationship of Biology with other areas of knowledge. The format of the curriculum allows a simple, clear, sequential flow of concepts. It relates the study of biology to real life through the use of technology. It links the discoveries and innovations in biology to everyday life such as environment, industry, health and agriculture. The updated curriculum focuses on understanding and application of scientific principles, while ensuring that ample opportunities and scope for learning and appreciating basic concepts continue to be available within its framework. The curriculum is expected to:

- promote understanding of basic principles of Biology
- encourage learning of emerging knowledge and its relevance to individual and society
- promote rational/scientific attitude towards issues related to population, environment and development
- enhance awareness about environmental issues, problems and their appropriate solutions
- create awareness amongst the learners about diversity in the living organisms and developing respect for other living beings
- appreciate that the most complex biological phenomena are built on essentially simple processes

It is expected that the students would get an exposure to various branches of Biology in the curriculum in a more contextual and systematic manner as they study its various units.

BIOLOGY (Code No. 044)

COURSE STRUCTURE

CLASS XI (2021 -22)

EVALUATION SCHEME		
Theory		
Units	Term – I	Marks
I	Diversity of Living Organisms: Chapter - 1, 2, 3 and 4	15
II	Structural Organization in Plants and Animals: Chapter – 5 and 7	08
III	Cell: Structure and Function: Chapter – 8 and 9	12
Units	Term - II	Marks
III	Cell: Structure and Function: Chapter - 10	05
IV	Plant Physiology: Chapter - 13,14 and 15	12
V	Human Physiology: Chapter –17, 18, 19, 20, 21 and 22	18
Total Theory (Term – I and Term – II)		70

Practicals Term – I	15
Practicals Term – II	15
Total	100

THEORY

Term – I

Unit-I Diversity of Living Organisms

Chapter-1: The Living World

What is living? Biodiversity; Need for classification; three domains of life; concept of species and taxonomical hierarchy; binomial nomenclature.

Chapter-2: Biological Classification

Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.

Chapter-3: Plant Kingdom

Salient features and classification of plants into major groups - Algae, Bryophyta, Pteridophyta and Gymnospermae. (salient and distinguishing features and a few examples of each category).

Chapter-4: Animal Kingdom

Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and distinguishing features of a few examples of each category). (No live animals or specimen should be displayed.)

Unit-II Structural Organization in Animals and Plants

Chapter-5: Morphology of Flowering Plants

Morphology of inflorescence and flower, Description of 01 family: Solanaceae or Liliaceae (to be dealt along with the relevant experiments of the Practical Syllabus).

Chapter-7: Structural Organization in Animals

Animal tissues.

Unit-III Cell: Structure and Function

Chapter-8: Cell-The Unit of Life

Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system, endoplasmic reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.

Chapter-9: Biomolecules

Chemical constituents of living cells: biomolecules, structure and function of proteins,

carbohydrates, lipids, nucleic acids; Enzymes- types, properties, enzyme action.

Term – II

Unit-III Cell: Structure and Function

Chapter-10: Cell Cycle and Cell Division

Cell cycle, mitosis, meiosis and their significance

Unit-IV Plant Physiology

Chapter-13: Photosynthesis in Higher Plants

Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis.

Chapter-14: Respiration in Plants

Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient.

Chapter-15: Plant - Growth and Development

Growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.

Unit-V Human Physiology

Chapter-17: Breathing and Exchange of Gases

Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration - asthma, emphysema, occupational respiratory disorders.

Chapter-18: Body Fluids and Circulation

Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.

Chapter-19: Excretory Products and their Elimination

Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system – structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in

excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.

Chapter-20: Locomotion and Movement

Skeletal muscle, contractile proteins and muscle contraction.

Chapter-21: Neural Control and Coordination

Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse.

Chapter-22: Chemical Coordination and Integration

Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease.

Note: Diseases related to all the human physiological systems to be taught in brief.

PRACTICALS

Max. Marks: 15 for each Term

Evaluation Scheme			
	TERM-I	TERM - II	MARKS
Part A			
One Major Experiment	Experiment No. - 1	Experiment No. -3, 4	4
One Minor Experiment	Experiment No. - 2	Experiment No. - 5, 6, 7	3
Part B			
Spotting (3 Spots of 1 mark each)	B.1, 2, 3	B.4, 5	3
Practical Record + Investigatory Project & Record + Viva Voce			5
Total			15

Practicals should be conducted alongside the concepts taught in theory classes.

A: List of Experiments

TERM -I:

1. Study and describe a locally available common flowering plant, from any one family: Solanaceae or Liliaceae (Poaceae, Asteraceae or Brassicaceae can be substituted in case of particular geographical location) including dissection and display of floral whorls, anther and ovary to show number of chambers (floral formulae and floral diagrams).
2. Study of osmosis by Potato osmometer.

TERM -II:

3. Separation of plant pigments through paper chromatography.
4. Study of distribution of stomata in the upper and lower surfaces of leaves.
5. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.
6. Test for presence of sugar in urine.
7. Test for presence of albumin in urine.

B. Study/Observation of the following (spotting):

TERM - I:

B.1 Parts of a compound microscope.

B.2 Specimens/slides/models and identification with reasons - Bacteria, *Oscillatoria*, *Spirogyra*, *Rhizopus*, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen.

B.3 Virtual specimens/slides/models and identifying features of - *Amoeba*, *Hydra*, liverfluke, *Ascaris*, leech, earthworm, prawn, silkworm, honeybee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.

TERM- II :

B.4 Tissues and diversity in shape and size of animal cells (squamous epithelium, smooth, skeletal and cardiac muscle fibers and mammalian blood smear) through temporary/permanent slides.

B.5 Mitosis in onion root tip cells and animal cells (grasshopper) from permanent slides.

Practical Examination for Visually Impaired Students Class XI

Note: The 'Evaluation schemes' and 'General Guidelines' for visually impaired students as given for Class XII may be followed.

Practicals should be conducted alongside the concepts taught in theory classes.

A. Items for Identification/Familiarity with the apparatus /equipments/animal and plant material / chemicals etc. for assessment in practicals (All experiments)

TERM - I:

- Plants of Solanaceae - Brinjal, Petunia, any other or Liliaceae- Any of the Lilies.
- **Compound microscope, Test tube, Petridish, Beaker, Scalpel.**

TERM - II:

- Mushroom, Succulents such as *Aloe vera/Kalanchoe*, Raisins, Potatoes.
- Honey comb, Mollusc shell, Model of cockroach, Pigeon and Star fish.
- Chromatography paper, Chromatography chamber, Alcohol.

B. List of Practicals:

TERM - I:

1. Study one locally available common flowering plants of the family – Solanaceae or Liliaceae and identify inflorescence/flower.
2. Study the parts of a compound microscope- eye piece and objective lens, mirror, stage, coarse and fine adjustment knobs.

TERM - II:

3. Identify the given specimen of a fungus – Mushroom, gymnosperm- pine cone
4. Study honey-bee/butterfly, snail shell, Starfish, Pigeon (through models).

Note: The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Biology Class-XI, Published by NCERT
2. Other related books and manuals brought out by NCERT (including multimedia)

BIOLOGY
(Code No. 044)
COURSE STRUCTURE
CLASS XII (2021 - 22)

EVALUATION SCHEME		
Theory		
Units	Term – I	Marks
VI	Reproduction: Chapter - 2, 3 and 4	15
VII	Genetics and Evolution: Chapter – 5 and 6	20
Units	Term - II	Marks
VIII	Biology and Human Welfare: Chapter – 8 and 10	14
IX	Biotechnology and its Applications: Chapter – 11 and 12	11
X	Ecology and Environment: Chapter – 13 and 15	10
Total Theory (Term – I and Term – II)		70
Practicals Term – I		15
Practicals Term – II		15
Total		100

THEORY

TERM - I

Unit-VI Reproduction

Chapter-2: Sexual Reproduction in Flowering Plants

Flower structure; development of male and female gametophytes; pollination - types, agencies and examples; outbreeding devices; pollen-pistil interaction; double fertilization; post fertilization events - development of endosperm and embryo, development of seed and formation of fruit; special modes- apomixis, parthenocarpy, polyembryony; Significance of seed dispersal and fruit formation.

Chapter-3: Human Reproduction

Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis - spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).

Chapter-4: Reproductive Health

Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control - need and methods, contraception and medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT (elementary idea for general awareness).

Unit-VII Genetics and Evolution

Chapter-5: Principles of Inheritance and Variation

Heredity and variation: Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; Sex determination - in human being, birds and honey bee; linkage and crossing over; sex linked inheritance - haemophilia, colour blindness; Mendelian disorders in humans -thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.

Chapter-6: Molecular Basis of Inheritance

Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central Dogma; transcription, genetic code, translation; gene expression and regulation - lac operon; Genome, Human and rice genome projects; DNA fingerprinting.

TERM - II

Unit-VIII Biology and Human Welfare

Chapter-8: Human Health and Diseases

Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence - drug and alcohol abuse.

Chapter-10: Microbes in Human Welfare

Microbes in food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers. Antibiotics; production and judicious use.

Unit-IX Biotechnology and its Applications

Chapter-11: Biotechnology - Principles and Processes

Genetic Engineering (Recombinant DNA Technology).

Chapter-12: Biotechnology and its Application

Application of biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy; genetically modified organisms - Bt crops; transgenic animals; biosafety issues, biopiracy and patents.

Unit-X Ecology and Environment

Chapter-13: Organisms and Populations

Organisms and environment: Habitat and niche, population and ecological adaptations; population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution.

Chapter-15: Biodiversity and its Conservation

Biodiversity - Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.

PRACTICALS

Max. Marks: 15 for each Term

Evaluation Scheme			
	TERM - I	TERM - II	MARKS
Part A			
One Major Experiment	Experiment No. – 1	Experiment No. - 3	4
One Minor Experiment	Experiment No. - 2	Experiment No. – 4, 5	3
Part B			
Spotting (3 Spots of 1 mark each)	B.1, 2, 3, 4, 5	B.6, 7, 8	3
Practical Record + Investigatory Project & Record + Viva Voce			5
Total			15

Practicals should be conducted alongside the concepts taught in theory classes.

A. List of Experiments

TERM - I:

1. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.
2. Prepare a temporary mount to observe pollen germination.

TERM - II:

3. Prepare a temporary mount of onion root tip to study mitosis.
4. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism
5. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity. Correlate with the kinds of plants found in them.

B. Study/observation of the following (Spotting)

TERM - I:

- B.1 Flowers adapted to pollination by different agencies (wind, insects, birds).
- B.2 Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).
- B.3 Meiosis in onion bud cell or grasshopper testis through permanent slides.
- B.4 T.S. of blastula through permanent slides (Mammalian).
- B.5 Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colourblindness.

TERM – II:

- B.6 Common disease - causing organisms like *Ascaris*, *Entamoeba*, *Plasmodium*, any fungus causing ringworm through permanent slides, models or virtual images. Comment on symptoms of diseases that they cause.
- B.7 Two plants and two animals (models/virtual images) found in xeric conditions. Comment upon their morphological adaptations.
- B.8 Two plants and two animals (models/virtual images) found in aquatic conditions. Comment upon their morphological adaptations.

Practical Examination for Visually Impaired Students of Classes XI and XII Evaluation Scheme

Max. Marks: 15 for each Term

Topic	Marks
Identification/Familiarity with the apparatus	5
Written test (Based on given/prescribed practicals)	5
Practical Records and Viva	5
Total	15

General Guidelines

- The practical examination will be of one-hour duration.
- The written examination in practicals for these students will be conducted at the time of practical examination of all other students.
- The written test will be of 30 minutes duration.
- The question paper given to the students should be legibly typed. It should contain a total of 8 practical skill based very short answer type questions. A student would be required to answer any 5 questions.
- A writer may be allowed to such students as per CBSE examination rules.
- All questions included in the question paper should be related to the listed practicals. Every question should require about two minutes to be answered.
- These students are also required to maintain a practical file. A student is expected to record the listed experiments Term -wise as per the specific instructions for each subject. These practicals should be duly checked and signed by the internal examiner.
- The format of writing any experiment in the practical file should include aim, apparatus

required, simple theory, procedure, related practical skills, precautions etc.

- Questions may be generated jointly by the external/internal examiners and used for assessment.
- The viva questions may include questions based on basic theory/principle/concept, apparatus/materials/chemicals required, procedure, precautions, sources of error etc.

Class XII

Practicals should be conducted alongside the concepts taught in theory classes.

A. Items for Identification/ familiarity with the apparatus for assessment in practicals (All experiments)

TERM -I:

- Beaker, flask, petri plates, test tubes, aluminium foil, paint brush, bunsen burner/spirit lamp/water bath.
- Starch solution, iodine, ice cubes.
- Developmental stages of frog highlighting morula and blastula.

TERM -II:

- Soil from different sites- sandy, clayey, loamy; Small potted plants, Cactus/*Opuntia* (model), Large flowers, Maize inflorescence.
- Model of *Ascaris*

B. List of Practical

TERM -I:

1. Study of flowers adapted to pollination by different agencies (wind, insects).
2. Identification of T.S of morula or blastula of frog (model).
3. Preparation of pedigree charts of genetic traits such as rolling of tongue, colour blindness.

TERM -II:

4. Study of the soil obtained from at least two different sites for their texture.
5. Identify common disease-causing organisms like *Ascaris* (Model) and learn some common symptoms of the disease that they cause.
6. Comment upon the morphological adaptations of plants found in xerophytic conditions.

Note: The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Biology, Class-XII, Published by NCERT
2. Other related books and manuals brought out by NCERT (including multimedia)
3. Biology Supplementary Material (Revised). Available on CBSE website.

Assessment Areas (Theory) 2021-22
Class XII
Biology (044)

Competencies	
Demonstrate Knowledge and Understanding	50%
Application of Knowledge / Concepts	30%
Analyse, Evaluate and Create	20%

Note:

- Internal choice would be provided.
-

Suggestive verbs for various competencies

- **Demonstrate, Knowledge and Understanding**
State, name, list, identify, define, suggest, describe, outline, summarize, etc.
 - **Application of Knowledge/Concepts**
Calculate, illustrate, show, adapt, explain, distinguish, etc.
 - **Analyse, Evaluate and Create**
Interpret, analyse, compare, contrast, examine, evaluate, discuss, construct, etc.
-

MATHEMATICS (XI-XII)
(Code No. 041)
Session – 2021-22

The Syllabus in the subject of Mathematics has undergone changes from time to time in accordance with growth of the subject and emerging needs of the society. Senior Secondary stage is a launching stage from where the students go either for higher academic education in Mathematics or for professional courses like Engineering, Physical and Biological science, Commerce or Computer Applications. The present revised syllabus has been designed in accordance with National Curriculum Framework 2005 and as per guidelines given in Focus Group on Teaching of Mathematics 2005 which is to meet the emerging needs of all categories of students. Motivating the topics from real life situations and other subject areas, greater emphasis has been laid on application of various concepts.

Objectives

The broad objectives of teaching Mathematics at senior school stage intend to help the students:

- to acquire knowledge and critical understanding, particularly by way of motivation and visualization, of basic concepts, terms, principles, symbols and mastery of underlying processes and skills.
- to feel the flow of reasons while proving a result or solving a problem.
- to apply the knowledge and skills acquired to solve problems and wherever possible, by more than one method.
- to develop positive attitude to think, analyze and articulate logically.
- to develop interest in the subject by participating in related competitions.
- to acquaint students with different aspects of Mathematics used in daily life.
- to develop an interest in students to study Mathematics as a discipline.
- to develop awareness of the need for national integration, protection of environment, observance of small family norms, removal of social barriers, elimination of gender biases.
- to develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics.

COURSE STRUCTURE
CLASS XI (2021-22)
TERM - I

One Paper

90 Minutes

Max Marks: 40

No.	Units	Marks
I.	Sets and Functions	11
II.	Algebra	13
III.	Coordinate Geometry	6
IV.	Calculus	4
V.	Statistics and Probability	6
	Total	40
	Internal Assessment	10
	Total	50

*No chapter-wise weightage. Care to be taken to cover all the chapters.

Unit-I: Sets and Functions

1. Sets

Sets and their representations. Empty set. Finite and Infinite sets. Equal sets. Subsets. Subsets of a set of real numbers especially intervals (with notations). Power set. Universal set. Venn diagrams. Union and Intersection of sets.

2. Relations & Functions

Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the set of reals with itself ($R \times R$ only). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special type of relation. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer functions, with their graphs.

Unit-II: Algebra

1. Complex Numbers and Quadratic Equations

Need for complex numbers, especially $\sqrt{-1}$, to be motivated by inability to solve some of the quadratic equations. Algebraic properties of complex numbers. Argand plane. Statement of Fundamental Theorem of Algebra, solution of quadratic equations (with real coefficients) in the complex number system.

2. Sequence and Series

Sequence and Series. Arithmetic Progression (A. P.). Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P., sum of n terms of a G.P., infinite G.P. and its sum, geometric mean (G.M.), relation between A.M. and G.M.

Unit-III: Coordinate Geometry

1. Straight Lines

Brief recall of two dimensional geometry from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axis, point -slope form, slope-intercept form, two-point form, intercept form and normal form. General equation of a line. Distance of a point from a line.

Unit-IV: Calculus

1. Limits

Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions

Unit-V: Statistics and Probability

1. Statistics

Measures of Dispersion: Range, mean deviation, variance and standard deviation of ungrouped/grouped data.

INTERNAL ASSESSMENT	10 MARKS
Periodic Test	5 Marks
Mathematics Activities: Activity file record +Term end assessment of one activity & Viva	5 Marks

Note: For activities NCERT Lab Manual may be referred

TERM - II

One Paper

Max Marks: 40

No.	Units	Marks
I.	Sets and Functions (Cont.)	8
II.	Algebra (Cont.)	11
III.	Coordinate Geometry (Cont.)	9
IV.	Calculus (Cont.)	6
V.	Statistics and Probability (Cont.)	6
	Total	40
	Internal Assessment	10
	Total	50

Unit-I: Sets and Functions

1. Trigonometric Functions

Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2 x + \cos^2 x = 1$, for all x . Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing $\sin(x \pm y)$ and $\cos(x \pm y)$ in terms of $\sin x$, $\sin y$, $\cos x$ & $\cos y$ and their simple applications. Deducing identities like the following:

$$\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}, \cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$$

$$\sin \alpha \pm \sin \beta = 2 \sin \frac{1}{2}(\alpha \pm \beta) \cos \frac{1}{2}(\alpha \mp \beta)$$

$$\cos \alpha + \cos \beta = 2 \cos \frac{1}{2}(\alpha + \beta) \cos \frac{1}{2}(\alpha - \beta)$$

$$\cos \alpha - \cos \beta = -2 \sin \frac{1}{2}(\alpha + \beta) \sin \frac{1}{2}(\alpha - \beta)$$

Identities related to $\sin 2x$, $\cos 2x$, $\tan 2x$, $\sin 3x$, $\cos 3x$ and $\tan 3x$.

Unit-II: Algebra

1. Linear Inequalities

Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line. Graphical solution of linear inequalities in two variables. Graphical method of finding a solution of system of linear inequalities in two variables.

2. Permutations and Combinations

Fundamental principle of counting. Factorial n . $(n!)$ Permutations and combinations, formula for ${}^n P_r$ and ${}^n C_r$, simple applications.

Unit-III: Coordinate Geometry

1. Conic Sections

Sections of a cone: circles, ellipse, parabola, hyperbola. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

2. Introduction to Three-dimensional Geometry

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points and section formula.

Unit-IV: Calculus

1. Derivatives

Derivative introduced as rate of change both as that of distance function and geometrically. Definition of Derivative, relate it to slope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

Unit-V: Statistics and Probability

1. Probability

Random experiments; outcomes, sample spaces (set representation). Events; occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events, Probability of an event, probability of 'not', 'and' and 'or' events.

INTERNAL ASSESSMENT	10 MARKS
Periodic Test	5 Marks
Mathematics Activities: Activity file record +Term end assessment of one activity & Viva	5 Marks

Note: For activities NCERT Lab Manual may be referred

- Please refer the guidelines given under XII Mathematics Syllabus:

CLASS-XII
MATHEMATICS (2021-22)
TERM - I

One Paper

90 minutes

Max Marks: 40

No.	Units	Marks
I.	Relations and Functions	08
II.	Algebra	10
III.	Calculus	17
V.	Linear Programming	05
	Total	40
	Internal Assessment	10
	Total	50

Unit-I: Relations and Functions

1. Relations and Functions

Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions.

2. Inverse Trigonometric Functions

Definition, range, domain, principal value branch.

Unit-II: Algebra

1. Matrices

Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operation on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. Non-commutativity of multiplication of matrices, Invertible matrices; (Here all matrices will have real entries).

2. Determinants

Determinant of a square matrix (up to 3×3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

Unit-III: Calculus

1. Continuity and Differentiability

Continuity and differentiability, derivative of composite functions, chain rule, derivative of inverse trigonometric functions, derivative of implicit functions. Concept of exponential and logarithmic functions.

Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives.

2. Applications of Derivatives

Applications of derivatives: increasing/decreasing functions, tangents and normals, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations).

Unit-V: Linear Programming

1. Linear Programming

Introduction, related terminology such as constraints, objective function, optimization, different types of linear programming (L.P.) problems. Graphical method of solution for problems in two variables, feasible and infeasible regions (bounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

INTERNAL ASSESSMENT	10 MARKS
Periodic Test	5 Marks
Mathematics Activities: Activity file record +Term end assessment of one activity & Viva	5 Marks

Note: For activities NCERT Lab Manual may be referred

TERM - II

One Paper

Max Marks: 40

No.	Units	Marks
III.	Calculus	18
IV.	Vectors and Three-Dimensional Geometry	14
VI.	Probability	8
	Total	40
	Internal Assessment	10
	Total	50

Unit-III: Calculus

1. Integrals

Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problems based on them.

$$\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^2 + bx + c}}$$
$$\int \frac{px + q}{ax^2 + bx + c} dx, \int \frac{px + q}{\sqrt{ax^2 + bx + c}} dx, \int \sqrt{a^2 \pm x^2} dx, \int \sqrt{x^2 - a^2} dx$$

Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.

2. Applications of the Integrals

Applications in finding the area under simple curves, especially lines, parabolas; area of circles /ellipses (in standard form only) (the region should be clearly identifiable).

3. Differential Equations

Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables, solutions of homogeneous differential equations of first order and first degree of the type: $\frac{dy}{dx} = f(y/x)$. Solutions of linear differential equation of the type:

$$\frac{dy}{dx} + py = q, \text{ where } p \text{ and } q \text{ are functions of } x \text{ or constant.}$$

Unit-IV: Vectors and Three-Dimensional Geometry

1. Vectors

Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors.

2. Three - dimensional Geometry

Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, coplanar and skew lines, shortest distance between two lines. Cartesian and vector equation of a plane. Distance of a point from a plane.

Unit-VI: Probability

1. Probability

Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution.

INTERNAL ASSESSMENT	10 MARKS
Periodic Test	5 Marks
Mathematics Activities: Activity file record +Term end assessment of one activity & Viva	5 Marks

Note: For activities NCERT Lab Manual may be referred

Assessment of Activity Work:

In first term any 4 activities and in second term any 4 activities shall be performed by the student from the activities given in the NCERT Laboratory Manual for the respective class (XI or XII) which is available on the link : <http://www.ncert.nic.in/exemplar/labmanuals.html> a record of the same may be kept by the student. A term end test on the activity is to be conducted.

The weightage are as under:

- The activities performed by the student in each term and record keeping : 3 marks
- Assessment of the activity performed during the term end test and Viva-voce : 2 marks

Prescribed Books:

- 1) Mathematics Textbook for Class XI, NCERT Publications
- 2) Mathematics Part I - Textbook for Class XII, NCERT Publication
- 3) Mathematics Part II - Textbook for Class XII, NCERT Publication
- 4) Mathematics Exemplar Problem for Class XI, Published by NCERT
- 5) Mathematics Exemplar Problem for Class XII, Published by NCERT
- 6) Mathematics Lab Manual class XI, published by NCERT
- 7) Mathematics Lab Manual class XII, published by NCERT

ACCOUNTANCY (Code No. 055)

Rationale

The course in accountancy is introduced at plus two stage of senior second of school education, as the formal commerce education is provided after ten years of schooling. With the fast changing economic scenario, accounting as a source of financial information has carved out a place for itself at the senior secondary stage. Its syllabus content provide students a firm foundation in basic accounting concepts and methodology and also acquaint them with the changes taking place in the preparation and presentation of financial statements in accordance to the applicable accounting standards and the Companies Act 2013.

The course in accounting put emphasis on developing basic understanding about accounting as an information system. The emphasis in Class XI is placed on basic concepts and process of accounting leading to the preparation of accounts for a sole proprietorship firm. The students are also familiarized with basic calculations of Goods and Services Tax (GST) in recording the business transactions. The accounting treatment of GST is confined to the syllabus of class XI.

The increased role of ICT in all walks of life cannot be overemphasized and is becoming an integral part of business operations. The learners of accounting are introduced to Computerized Accounting System at class XI and XII. Computerized Accounting System is a compulsory component which is to be studied by all students of commerce in class XI; whereas in class XII it is offered as an optional subject to Company Accounts and Analysis of Financial Statements. This course is developed to impart skills for designing need based accounting database for maintaining book of accounts.

The complete course of Accountancy at the senior secondary stage introduces the learners to the world of business and emphasize on strengthening the fundamentals of the subject.

Objectives:

1. To familiarize students with new and emerging areas in the preparation and presentation of financial statements.
2. To acquaint students with basic accounting concepts and accounting standards.

3. To develop the skills of designing need based accounting database.
4. To appreciate the role of ICT in business operations.
5. To develop an understanding about recording of business transactions and preparation of financial statements.
6. To enable students with accounting for Not-for-Profit organizations, accounting for Partnership Firms and company accounts.

Accountancy (Code No.055)

Course Structure

Class-XI (2021-22)

TERM – 1 (MCQ BASED QUESTION PAPER)		MARKS
THEORY :40 MARKS		TIME: 90 minutes
Part A: FINANCIAL ACCOUNTING-I		
UNIT 1		
THEORETICAL FRAMEWORK:		12
1	INTRODUCTION TO ACCOUNTING	
2	THEORY BASE OF ACCOUNTING	
UNIT 2		
ACCOUNTING PROCESS:		28
RECORDING OF BUSINESS TRANSACTIONS, BANK RECONCILIATION STATEMENT, DEPRECIATION, PROVISIONS AND RESERVES		
TOTAL		40
Project Work (Part -1): 10 Marks		

PART A: FINANCIAL ACCOUNTING - I

Unit-1: Theoretical Framework

Units/Topics	Learning Outcomes
Introduction to Accounting <ul style="list-style-type: none">Accounting- concept, objectives, advantages and limitations, types of accounting information; users of accounting information and their needs. Qualitative Characteristics of Accounting Information. Role of Accounting in Business.Basic Accounting Terms- Business Transaction, Capital, Drawings. Liabilities (Non Current and Current). Assets (Non Current, Current); Fixed assets (Tangible and Intangible), Expenditure (Capital and Revenue), Expense, Income, Profit, Gain, Loss, Purchase, Sales, Goods, Stock, Debtor, Creditor, Voucher, Discount (Trade discount and Cash Discount)	After going through this Unit, the students will be able to: <ul style="list-style-type: none">describe the meaning, significance, objectives, advantages and limitations of accounting in the modern economic environment with varied types of business and non-business economic entities.identify / recognise the individual(s) and entities that use accounting information for serving their needs of decision making.explain the various terms used in accounting and differentiate between different related terms like current and non-current, capital and revenue.give examples of terms like business transaction, liabilities, assets, expenditure and purchases.

<p>Theory Base of Accounting</p> <ul style="list-style-type: none"> • Fundamental accounting assumptions: GAAP: Concept • Business Entity, Money Measurement, Going Concern, Accounting Period, Cost Concept, Dual Aspect, Revenue Recognition, Matching, Full Disclosure, Consistency, Conservatism, Materiality and Objectivity • System of Accounting. Basis of Accounting: cash basis and accrual basis • Accounting Standards: Applicability in IndAS • Goods and Services Tax (GST): Characteristics and Objective. 	<ul style="list-style-type: none"> • explain that sales/purchases include both cash and credit sales/purchases relating to the accounting year. • differentiate among income, profits and gains. • state the meaning of fundamental accounting assumptions and their relevance in accounting. • describe the meaning of accounting assumptions and the situation in which an assumption is applied during the accounting process. • explain the meaning and objectives of accounting standards. • appreciate that various accounting standards developed nationally and globally are in practice for bringing parity in the accounting treatment of different items. • acknowledge the fact that recording of accounting transactions follows double entry system. • explain the bases of recording accounting transaction and to appreciate that accrual basis is a better basis for depicting the correct financial position of an enterprise. • Understand the need of IFRS • Explain the meaning, objective and characteristic of GST.
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Unit-2: Accounting Process

Units/Topics	Learning Outcomes
<p>Recording of Business Transactions</p> <ul style="list-style-type: none"> • Voucher and Transactions: Source documents and Vouchers, Preparation of Vouchers, Accounting Equation Approach: Meaning and Analysis, Rules of Debit and Credit. • Recording of Transactions: Books of Original 	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> • explain the concept of accounting equation and appreciate that every transaction affects either both the sides of the equation or a positive effect on one item and a negative effect on another item on the same side of

<p>Entry- Journal</p> <ul style="list-style-type: none"> • Special Purpose books: • Cash Book: Simple, cash book with bank column and petty cashbook • Purchases book • Sales book • Purchases return book • Sales return book <p>Note: Including trade discount, freight and cartage expenses for simple GST calculation.</p> <ul style="list-style-type: none"> • Ledger: Format, Posting from journal and subsidiary books, Balancing of accounts <p>Bank Reconciliation Statement:</p> <ul style="list-style-type: none"> • Need and preparation. <p>Depreciation, Provisions and Reserves</p> <ul style="list-style-type: none"> • Depreciation: Concept, Features, Causes, factors • Other similar terms: Depletion and Amortisation • Methods of Depreciation: <ul style="list-style-type: none"> i. Straight Line Method (SLM) ii. Written Down Value Method (WDV) <p>Note: Excluding change of method</p> <ul style="list-style-type: none"> • Difference between SLM and WDV; Advantages of SLM and WDV • Accounting treatment of depreciation <ul style="list-style-type: none"> i. Charging to asset account ii. Creating provision for depreciation/accumulated depreciation account • Provisions and Reserves: Difference • Types of Reserves: <ul style="list-style-type: none"> i. Revenue reserve ii. Capital reserve iii. General reserve iv. Specific reserve 	<p>accounting equation.</p> <ul style="list-style-type: none"> • explain the effect of a transaction (increase or decrease) on the assets, liabilities, capital, revenue and expenses. • appreciate that on the basis of source documents, accounting vouchers are prepared for recording transaction in the books of accounts. • develop the understanding of recording of transactions in journal and the skill of calculating GST. • explain the purpose of maintaining a Cash Book and develop the skill of preparing the format of different types of cash books and the method of recording cash transactions in Cash book. • describe the method of recording transactions other than cash transactions as per their nature in different subsidiary books . • appreciate that at times bank balance as indicated by cash book is different from the bank balance as shown by the pass book / bank statement and to reconcile both the balances, bank reconciliation statement is prepared. • develop understanding of preparing bank reconciliation statement. • appreciate that for ascertaining the position of individual accounts, transactions are posted from subsidiary books and journal proper into the concerned accounts in the ledger and develop the skill of ledger posting. • explain the necessity of providing depreciation and develop the skill of using different methods for computing depreciation. • understand the accounting treatment of providing depreciation directly to the concerned asset account or by creating provision for depreciation account.
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<p>v. Secret Reserve</p> <ul style="list-style-type: none"> Difference between capital and revenue reserve 	<ul style="list-style-type: none"> appreciate the need for creating reserves and also making provisions for events which may belong to the current year but may happen in next year. appreciate the difference between reserve and reserve fund.
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<u>TERM II</u>		MARKS
Theory: 40 Marks		
Part A		
<u>UNIT 2</u>		
<u>ACCOUNTING PROCESS:</u>		
1	ACCOUNTING FOR BILLS OF EXCHANGE	12
2	TRIAL BALANCE AND RECTIFICATION OF ERRORS	
Part B: FINANCIAL ACCOUNTING-II		
<u>UNIT 3</u>		
FINANCIAL STATEMENTS OF SOLE PROPRIETORSHIP FROM COMPLETE AND INCOMPLETE RECORDS		20
<u>UNIT 4</u>		
COMPUTERS IN ACCOUNTING		8
TOTAL		40
PROJECT (PART – 2): 10 MARKS		

<p>Accounting for Bills of Exchange</p> <ul style="list-style-type: none"> • Bill of exchange and Promissory Note: Definition, Specimen, Features, Parties. • Difference between Bill of Exchange and Promissory Note • Terms in Bill of Exchange: <ul style="list-style-type: none"> i. Term of Bill ii. Accommodation bill (concept) iii. Days of Grace iv. Date of maturity v. Discounting of bill vi. Endorsement of bill vii. Bill after due date viii. Negotiation ix. Bill sent for collection x. Dishonour of bill • Accounting Treatment <p>Note: excluding accounting treatment for accommodation bill</p> <p>Trial balance and Rectification of Errors</p> <ul style="list-style-type: none"> • Trial balance: objectives and preparation <p>(Scope: Trial balance with balance method only)</p> <ul style="list-style-type: none"> • Errors: types-errors of omission, commission, principles, and compensating; their effect on Trial Balance. • Detection and rectification of errors; preparation of suspense account. 	<ul style="list-style-type: none"> • acquire the knowledge of using bills of exchange and promissory notes for financing business transactions. • understand the meaning and distinctive features of these instruments and develop the skills of their preparation. • state the meaning of different terms used in bills of exchange and their implication in accounting. • explain the method of recording of bill transactions. • state the need and objectives of preparing trial balance and develop the skill of preparing trial balance. • appreciate that errors may be committed during the process of accounting. • understand the meaning of different types of errors and their effect on trial balance. • develop the skill of identification and location of errors and their rectification and preparation of suspense account.
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Part B: Financial Accounting - II

Unit 3: Financial Statements of Sole Proprietorship

Units/Topics	Learning Outcomes
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<p>Financial Statements</p> <p>Meaning, objectives and importance; Revenue and Capital Receipts; Revenue and Capital Expenditure; Deferred Revenue expenditure.</p> <p>Trading and Profit and Loss Account: Gross Profit, Operating profit and Net profit. Preparation.</p> <p>Balance Sheet: need, grouping and marshalling of assets and liabilities. Preparation.</p> <p>Adjustments in preparation of financial statements with respect to closing stock, outstanding expenses, prepaid expenses, accrued income, income received in advance, depreciation, bad debts, provision for doubtful debts, provision for discount on debtors, Abnormal loss, goods taken for personal use/staff welfare, interest on capital and managers commission.</p> <p>Preparation of Trading and Profit and Loss account and Balance Sheet of a sole proprietorship with adjustments.</p> <p>Incomplete Records</p> <p>Features, reasons and limitations.</p> <p>Ascertainment of Profit/Loss by Statement of Affairs method.</p>	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> • state the meaning of financial statements the purpose of preparing financial statements. • state the meaning of gross profit, operating profit and net profit and develop the skill of preparing trading and profit and loss account. • explain the need for preparing balance sheet. • understand the technique of grouping and marshalling of assets and liabilities. • appreciate that there may be certain items other than those shown in trial balance which may need adjustments while preparing financial statements. • develop the understanding and skill to do adjustments for items and their presentation in financial statements like depreciation, closing stock, provisions, abnormal loss etc. • develop the skill of preparation of trading and profit and loss account and balance sheet. • state the meaning of incomplete records and their uses and limitations. • develop the understanding and skill of computation of profit / loss using the statement of affairs method.
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Unit 4: Computers in Accounting

Units/Topics	Learning Outcomes
<ul style="list-style-type: none"> • Introduction to computer and accounting information system (AIS): Introduction to computers (elements, capabilities, limitations of computer system) 	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> • state the meaning of a computer, describe its components, capabilities and limitations. • state the meaning of accounting information system.

<p>Scope:</p> <p>(i) <i>The scope of the unit is to understand accounting as an information system for the generation of accounting information and preparation of accounting reports.</i></p> <p>(ii) <i>It is presumed that the working knowledge of any appropriate accounting software will be given to the students to help them learn basic accounting operations on computers.</i></p>	<ul style="list-style-type: none"> • appreciate the need for use of computers in accounting for preparing accounting reports. • develop the understanding of comparing the manual and computerized accounting process and appreciate the advantages and limitations of automation. • understand the different kinds of accounting software.
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Part C: Project Work

The project work would be divided into two parts i.e. Term I (10 marks) and Term II (10 marks) for the purpose of assessment and will be covered as detailed below.

Comprehensive project of any sole proprietorship business. This may state with journal entries and their ledger postings, preparation of Trial balance. Trading and Profit and Loss Account and Balance Sheet. Expenses, incomes and profit (loss), assets and liabilities are to be depicted using pie chart / bar diagram.

TERM -I

<u>PARTICULARS</u>	<u>MARKS</u>
Project (Till Ledger Posting and balancing of accounts)	10

TERM -II

<u>PARTICULARS</u>	<u>MARKS</u>
Project (Financial statements and depiction using diagrammatic / graphical tools)	10

PROJECT WORK

It is suggested to undertake this project after completing the unit on preparation of financial statements. The student(s) will be allowed to select any business of their choice or develop the transaction of imaginary business. The project is to run through the chapters and make the project an interesting process. The amounts should emerge as more realistic and closer to reality.

Specific Guidelines for Teachers

Give a list of options to the students to select a business form. You can add to the given list:

- | | | |
|---------------------|------------------|-------------------|
| 1. A beauty parlour | 10. Men's wear | 19. A coffee shop |
| 2. Men's saloon | 11. Ladies wear | 20. A music shop |
| 3. A tailoring shop | 12. Kiddies wear | 21. A juice shop |

- | | | |
|-------------------------|-------------------------------|--------------------------|
| 4. A canteen | 13. A Saree shop | 22. A school canteen |
| 5. A cake shop | 14. Artificial jewellery shop | 23. An ice cream parlour |
| 6. A confectionery shop | 15. A small restaurant | 24. A sandwich shop |
| 7. A chocolate shop | 16. A sweet shop | 25. A flower shop |
| 8. A dry cleaner | 17. A grocery shop | |
| 9. A stationery shop | 18. A shoe shop | |

After selection, advise the student(s) to visit a shop in the locality (this will help them to settle on a realistic amounts different items. The student(s) would be able to see the things as they need to invest in furniture, decor, lights, machines, computers etc.

A suggested list of different item is given below.

- | | |
|--|---|
| 1. Rent | 19. Wages and Salary |
| 2. Advance rent [approximately three months] | 20. Newspaper and magazines |
| 3. Electricity deposit | 21. Petty expenses |
| 4. Electricity bill | 22. Tea expenses |
| 5. Electricity fitting | 23. Packaging expenses |
| 6. Water bill | 24. Transport |
| 7. Water connection security deposit | 25. Delivery cycle or a vehicle purchased |
| 8. Water fittings | 26. Registration |
| 9. Telephone bill | 27. Insurance |
| 10. Telephone security deposit | 28. Auditors fee |
| 11. Telephone instrument | 29. Repairs & Maintenance |
| 12. Furniture | 30. Depreciations |
| 13. Computers | 31. Air conditioners |
| 14. Internet connection | 32. Fans and lights |
| 15. Stationery | 33. Interior decorations |
| 16. Advertisements | 34. Refrigerators |
| 17. Glow sign | 35. Purchase and sales |
| 18. Rates and Taxes | |

At this stage, performas of bulk of originality and ledger may be provided to the students and they may be asked to complete the same.

In the next step the students are expected to prepare the trial balance and the financial statements.

Accountancy (Code No. 055)

(2021-22)

CLASS XII - CURRICULUM (TERM-WISE)

TERM -1 (MCQ BASED QUESTION PAPER)		
Theory:40 Marks	Duration: 90 minutes	MARKS
	Part A	
	<u>UNIT</u>	
	<u>ACCOUNTING FOR PARTNERSHIP FIRMS:</u>	18
1	FUNDAMENTALS	
2	CHANGE IN PROFIT SHARING RATIO	
3	ADMISSION OF A PARTNER	
	<u>COMPANY ACCOUNTS:</u>	12
1	ACCOUNTING FOR SHARES	
	PART B	
	<u>ANALYSIS OF FINANCIAL STATEMENTS:</u>	10
1	FINANCIAL STATEMENTS OF A COMPANY <i>(i) Statement of Profit and Loss and Balance Sheet in prescribed form with major headings and sub headings (as per Schedule III to the Companies Act, 2013)</i> <i>(ii) Tools of Analysis - Ratio Analysis</i>	
2	ACCOUNTING RATIOS	
	OR	
	<u>COMPUTERISED ACCOUNTING</u>	10
1	OVERVIEW OF COMPUTERISED ACCOUNTING SYSTEM	
2	ACCOUNTING APPLICATION OF ELECTRONIC SPREADSHEET	
	Total	40
	Project Work (Part -1): 10 Marks	

Part - A:

Unit : Accounting for Partnership Firms

Units/Topics	Learning Outcomes
<ul style="list-style-type: none">Partnership: features, Partnership Deed.Provisions of the Indian Partnership Act 1932 in the absence of partnership deed.Fixed v/s fluctuating capital accounts. Preparation of Profit and Loss Appropriation account- division of profit among partners, guarantee of profits.Past adjustments (relating to interest on capital, interest on drawing, salary and profit sharing ratio).Goodwill: nature, factors affecting and methods of valuation - average profit, superprofit and capitalization. <p><i>Note: Interest on partner's loan is to be treated as a charge against profits.</i></p> <p>Goodwill to be adjusted through partners capital/current account.</p> <p><i>Note: Raising and writing off goodwill is excluded.</i></p> <p>Accounting for Partnership firms - Reconstitution</p> <ul style="list-style-type: none">Change in the Profit Sharing Ratio among the existing partners - sacrificing ratio, gaining ratio, accounting for revaluation of assets and reassessment of liabilities and treatment of reserves and accumulated profits. Preparation of revaluation account and balance sheet.Admission of a partner - effect of admission of a partner on change in the profit sharing ratio, treatment of goodwill, treatment for revaluation of assets and reassessment of liabilities, treatment of reserves and accumulated profits.	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none">state the meaning of partnership, partnership firm and partnership deed.describe the characteristic features of partnership and the contents of partnership deed.discuss the significance of provision of Partnership Act in the absence of partnership deed.differentiate between fixed and fluctuating capital, outline the process and develop the understanding and skill of preparation of Profit and Loss Appropriation Account.develop the understanding and skill of preparation profit and loss appropriation account involving guarantee of profits.develop the understanding and skill of making past adjustments.state the meaning, nature and factors affecting goodwilldevelop the understanding and skill of valuation of goodwill using different methods.state the meaning of sacrificing ratio, gaining ratio and the change in profit sharing ratio among existing partners.develop the understanding of accounting treatment of revaluation assets and reassessment of liabilities and treatment of reserves and accumulated profits by preparing revaluation account and balance sheet.explain the effect of change in profit sharing ratio on admission of a new partner.develop the understanding and skill of treatment of goodwill, treatment of revaluation of assets and reassessment of liabilities, treatment of reserves and accumulated profits, and preparation of balance sheet of the new firm.

Unit - Accounting for Companies

Units/Topics	Learning Outcomes
<p>Accounting for Share Capital</p> <ul style="list-style-type: none"> Share and share capital: nature and types. Accounting for share capital: issue and allotment of equity and preference shares. Public subscription of shares - over subscription and under subscription of shares; issue at par and at premium, calls in advance and arrears (excluding interest), issue of shares for consideration other than cash. Concept of Private Placement and Employee Stock Option Plan (ESOP). Accounting treatment of forfeiture and re-issue of shares. Disclosure of share capital in the Balance Sheet of a company. 	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> state the meaning of share and share capital and differentiate between equity shares and preference shares and different types of share capital. understand the meaning of private placement of shares and Employee Stock Option Plan. explain the accounting treatment of share capital transactions regarding issue of shares. develop the understanding of accounting treatment of forfeiture and re-issue of forfeited shares. describe the presentation of share capital in the balance sheet of the company as per schedule III part I of the Companies Act 2013.

Part – B:

Unit : Analysis of Financial Statements

Units/Topics	Learning Outcomes
<p>Financial statements of a Company: Statement of Profit and Loss and Balance Sheet in prescribed form with major headings and sub headings (as per Schedule III to the Companies Act, 2013)</p> <p>Note: <i>Exceptional items, extraordinary items and profit (loss) from discontinued operations are excluded.</i></p> <ul style="list-style-type: none"> Financial Statement Analysis: Objectives, importance and limitations. Accounting Ratios: Meaning, Objectives, classification and computation. Liquidity Ratios: Current ratio and Quick ratio. Solvency Ratios: Debt to Equity Ratio, Total Asset to Debt Ratio, Proprietary Ratio and interest coverage ratio. Activity Ratios: Inventory Turnover Ratio, Trade Receivables Turnover Ratio, Trade Payables Turnover Ratio and Working Capital Turnover Ratio. 	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> develop the understanding of major headings and sub-headings (as per Schedule III to the Companies Act, 2013) of balance sheet as per the prescribed norms / formats. state the meaning, objectives and limitations of financial statement analysis. discuss the meaning of different tools of 'financial statements analysis'. state the meaning, objectives and significance of different types of ratios. develop the understanding of computation of current ratio and quick ratio. develop the skill of computation of debt equity ratio, total asset to debt ratio, proprietary ratio and interest coverage ratio. develop the skill of computation of inventory turnover ratio, trade receivables and trade payables ratio and working capital turnover ratio. develop the skill of computation of gross

<ul style="list-style-type: none"> Profitability Ratios: Gross Profit Ratio, Operating Ratio, Operating Profit Ratio, Net Profit Ratio and Return on Investment. 	profit ratio, operating ratio, operating profit ratio, net profit ratio and return on investment.
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Note: Net Profit Ratio is to be calculated on the basis of profit before and after tax.

OR

Part B: Computerised Accounting

Unit : Computerised Accounting

Overview of Computerised Accounting System

- Introduction: Application in Accounting.
- Features of Computerised Accounting System.
- Structure of CAS.
- Software Packages: Generic; Specific; Tailored.

Accounting Application of Electronic Spreadsheet.

- Concept of electronic spreadsheet.
- Features offered by electronic spreadsheet.
- Application in generating accounting information - bank reconciliation statement; asset accounting; loan repayment of loan schedule, ratio analysis
- Data representation- graphs, charts and diagrams.

TERM -II

	<u>TERM II</u>	MARKS
	<u>Theory: 40 Marks</u>	
	Part A	
	<u>UNIT</u>	
1	<u>ACCOUNTING FOR NOT-FOR PROFIT ORGANISATIONS</u>	10
	-	
	<u>ACCOUNTING FOR PARTNERSHIP FIRMS:</u>	12
1	RETIREMENT AND DEATH OF A PARTNER	
2	DISSOLUTION OF PARTNERSHIP FIRMS	
	<u>COMPANY ACCOUNTS:</u>	8
1	ACCOUNTING FOR DEBENTURES	
	Part B	
	<u>ANALYSIS OF FINANCIAL STATEMENTS:</u>	10
1	FINANCIAL STATEMENTS OF A COMPANY	

	(i) COMPARATIVE AND COMMON SIZE STATEMENTS	
2	CASH FLOW STATEMENT	
	OR	
	COMPUTERISED ACCOUNTING	10
1	USING COMPUTERISED ACCOUNTING SYSTEM	
2	DATABASE MANAGEMENT SYSTEM	
	Total	40
	PROJECT (PART – 2): 10 MARKS	

Part - A:

Unit : Accounting for Not – For Profit Organisations

Units/Topics	Learning Outcomes
<ul style="list-style-type: none"> Not-for-profit organizations: concept. Receipts and Payments Account: features and preparation. Income and Expenditure Account: features, preparation of income and expenditure account and balance sheet from the given receipts and payments account with additional information. <p>Scope:</p> <p>(i) Adjustments in a question should not exceed 3 or 4 in number and restricted to subscriptions, consumption of consumables and sale of assets/ old material.</p> <p>(ii) Entrance/admission fees and general donations are to be treated as revenue receipts.</p> <p>(iii) Trading Account of incidental activities is not to be prepared.</p>	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> state the meaning of a Not-for-profit organisation and its distinction from a profit making entity. state the meaning of receipts and payments account, and understanding its features. develop the understanding and skill of preparing receipts and payments account. state the meaning of income and expenditure account and understand its features. develop the understanding and skill of preparing income and expenditure account and balance sheet of a not-for-profit organisation with the help of given receipts and payments account and additional information.

Unit : Accounting for Partnership Firms

<p>Accounting for Partnership firms - Reconstitution and Dissolution.</p> <ul style="list-style-type: none"> Retirement and death of a partner: effect of retirement / death of a partner on change in profit sharing ratio, treatment of goodwill, treatment for revaluation of assets and reassessment of liabilities, adjustment of accumulated profits and reserves and preparation of balance sheet. Calculation of deceased partner's share of profit till the date of death. 	<ul style="list-style-type: none"> explain the effect of retirement / death of a partner on change in profit sharing ratio. develop the understanding of accounting treatment of goodwill, revaluation of assets and re-assessment of liabilities and adjustment of accumulated profits and reserves on retirement / death of a partner. develop the skill of calculation of deceased
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<p>Dissolution of a partnership firm: meaning of dissolution of partnership and partnership firm, types of dissolution of a firm. Settlement of accounts - preparation of realization account, and other related accounts: capital accounts of partners and cash/bank a/c (excluding piecemeal distribution, sale to a company and insolvency of partner(s)).</p> <p>Note:</p> <p>(i) If realized value of an asset is not given, it is to be presumed that it has not realised any amount.</p> <p>(ii) If a partner has borne and/ or paid the realisation expenses, it should be stated.</p>	<p>partner's share till the time of his death.</p> <ul style="list-style-type: none"> • discuss the preparation of the capital accounts of the remaining partners and the balance sheet of the firm after retirement / death of a partner. • understand the situations under which a partnership firm can be dissolved. • develop the understanding of preparation of realisation account and other related accounts.
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Unit - Accounting for Companies

Units/Topics	Learning Outcomes
<p>Accounting for Debentures</p> <ul style="list-style-type: none"> • Debentures: Issue of debentures at par, at a premium and at a discount. Issue of debentures for consideration other than cash; Issue of debentures with terms of redemption; debentures as collateral security-concept, interest on debentures. Writing off discount / loss on issue of debentures. <p>Note: Discount or loss on issue of debentures to be written off in the year debentures are allotted from Security Premium Reserve/ Capital Reserve/ Statement of Profit and Loss as Financial Cost (AS16) in that order.</p> <p><i>Note: Related sections of the Companies Act, 2013 will apply.</i></p> <p><i>Concept of Tax Deducted at Source (TDS) is excluded.</i></p>	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> • explain the accounting treatment of different categories of transactions related to issue of debentures. • develop the understanding and skill of writing off discount / loss on issue of debentures. • understand the concept of collateral security and its presentation in balance sheet. • develop the skill of calculating interest on debentures and its accounting treatment. • state the meaning of redemption of debentures.

Part – B:

Unit : Analysis of Financial Statements

Units/Topics	Learning Outcomes
Financial statements of a Company: <ul style="list-style-type: none">• Tools for Financial Statement Analysis: Comparative statements, common size statements.	After going through this Unit, the students will be able to: <ul style="list-style-type: none">• develop the understanding and skill of preparation of comparative and common size financial statements.

Unit : Cash Flow Statement

Units/Topics	Learning Outcomes
<ul style="list-style-type: none">Meaning, objectives and preparation (as per AS 3 (Revised) (Indirect Method only) <p>Note:</p> <p><i>(i) Adjustments relating to depreciation and amortization, profit or loss on sale of assets including investments, dividend (both final and interim) and tax.</i></p> <p><i>(ii) Bank overdraft and cash credit to be treated as short term borrowings.</i></p> <p><i>(iii) Current Investments to be taken as Marketable securities unless otherwise specified.</i></p>	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none">state the meaning and objectives of cash flow statement.develop the understanding of preparation of Cash Flow Statement using indirect method as per AS 3 with given adjustments.

Note: Previous years' Proposed Dividend to be given effect, as prescribed in AS-4, Events occurring after the Balance Sheet date. Current years' Proposed Dividend will be accounted for in the next year after it is declared by the shareholders.

OR

Part B: Computerised Accounting

Unit : Computerised Accounting

Using Computerized Accounting System.

- Steps in installation of CAS, codification and Hierarchy of account heads, creation of accounts.
- Data: Entry, validation and verification.
- Adjusting entries, preparation of balance sheet, profit and loss account with closing entries and opening entries.
- Need and security features of the system.

Database Management System (DBMS)

- Concept and Features of DBMS.
- DBMS in Business Application.
- Generating Accounting Information – Payroll.

Part C: Practical Work

Students would prepare only ONE project in the entire academic session, which is divided into two terms i.e. Term – I and Term – II

Detailed guidelines for project work are as follows-

Students need to create **one specific project** only in which they would be required to cover the company profile, assessment of financial

statements, and specific report analysis. The main objective of preparing the project report is for the following reason:

1. Students are able to state the meaning, objectives, and limitations of financial statement analysis.
2. Study the proper use of different tools of 'financial statements analysis' like comparative analysis, Ratios and Cash flow statement.
3. Capable to create Comparative Statements and Common Size Statement.
4. Understand the Meaning, objective, advantage, and limitation of Accounting Ratios.

TERM -I

<u>PARTICULARS</u>	<u>MAXIMUM MARKS</u>
Written Test (based on Project – Accounting Ratios)	6
Practical file	2
Viva (Ratio Analysis)	2

TERM -II

<u>PARTICULARS</u>	<u>MAXIMUM MARKS</u>
Written Test (based on Comparative Statements and Common Size Statement and Cash Flow statement)	6
Practical file	2
Viva (Comparative Statements and Common Size Statement and Cash flow Statement)	2

Prescribed Books:

Financial Accounting -I	Class XI	NCERT Publication
Accountancy -II	Class XI	NCERT Publication
Accountancy -I	Class XII	NCERT Publication
Accountancy -II	Class XII	NCERT Publication
Accountancy – Computerised Accounting System	Class XII	NCERT Publication

BUSINESS STUDIES (Code No. 054)

Rationale

The courses in Business Studies are introduced at + 2 stage of Senior Secondary Education as formal commerce education is provided after the first ten years of schooling. Therefore, it becomes necessary that instructions in these subjects are given in such a manner that students have a good understanding of the principles and practices bearing in business (trade and industry) as well as their relationship with the society.

Business is a dynamic process that brings together technology, natural resources and human initiative in a constantly changing global environment. To understand the framework in which a business operates, a detailed study of the organisation and management of business processes and its interaction with the environment is required. Globalisation has changed the way organizations transact their business.

Information Technology is becoming a part of business operations in more and more organizations. Computerized systems are fast replacing other systems. E-business and other related concepts are picking up fast which need to be emphasized in the curriculum.

The course in Business Studies prepares students to analyze, manage, evaluate and respond to changes which affect business. It provides a way of looking at and interacting with the business environment. It recognizes the fact that business influences and is influenced by social, political, legal and economic forces.

It allows students to appreciate that business is an integral component of society and develops an understanding of many social and ethical issues.

Therefore, to acquire basic knowledge of the business world, a course in Business Studies would be useful. It also informs students of a range of study and work options and bridges the gap between school and work.

Objectives:

- To inculcate business attitude and develop skills among students to pursue higher education, world of work including self employment.
- To develop students with an understanding of the processes of business and its environment;
- To acquaint students with the dynamic nature and interdependent aspects of business;

- To develop an interest in the theory and practice of business, trade and industry;
- To familiarize students with theoretical foundations of the process of organizing and managing the operations of a business firm;
- To help students appreciate the economic and social significance of business activity and the social cost and benefits arising there from;
- To acquaint students with the practice of managing the operations and resources of business;
- To enable students to act more effectively and responsibly as consumers, employers, employees and citizens;

**BUSINESS STUDIES (Code No. 054)
CLASS–XI (2021-22) TERM WISE CURRICULUM**

TERM 1-MCQ BASED QUESTION PAPER			
THEORY - 40 MARKS		DURATION: 90 MINUTES	
Units		Periods	Marks
Part A	Foundations of Business		
1	Evolution and Fundamentals of Business	18	16
2	Forms of Business Organisations	20	
3	Public, Private and Global Enterprises	10	14
4	Business Services	14	
5	Emerging Modes of Business	05	10
6	Social Responsibility of Business and Business Ethics	08	
	Total	75	40
	PROJECT WORK (Part-1)		10

TERM I

Part A: Foundation of Business

Concept includes meaning and features

Unit 1: Evolution and Fundamentals of Business

Content	After going through this unit, the student/ learner would be able to:
History of Trade and Commerce in India: Indigenous Banking System, Rise of Intermediaries, Transport, Trading Communities: Merchant Corporations, Major Trade Centers, Major Imports and Exports, Position of Indian Sub-Continent in the World Economy.	<ul style="list-style-type: none"> • To acquaint the History of Trade and Commerce in India
Business – meaning and characteristics	<ul style="list-style-type: none"> • Understand the meaning of business with special reference to economic and non-

	<p>economic activities.</p> <ul style="list-style-type: none"> ● Discuss the characteristics of business.
Business, profession and employment-Concept	<ul style="list-style-type: none"> ● Understand the concept of business, profession and employment. ● Differentiate between business, profession and employment.
Objectives of business	<ul style="list-style-type: none"> ● Appreciate the economic and social objectives of business. ● Examine the role of profit in business.
Classification of business activities - Industry and Commerce	<ul style="list-style-type: none"> ● Understand the broad categories of business activities- industry and commerce.
Industry-types: primary, secondary, tertiary Meaning and subgroups	<ul style="list-style-type: none"> ● Describe the various types of industries.
Commerce-trade: (types-internal, external; wholesale and retail) and auxiliaries to trade; (banking, insurance, transportation, warehousing, communication, and advertising) – meaning	<ul style="list-style-type: none"> ● Discuss the meaning of commerce, trade and auxiliaries to trade. ● Discuss the meaning of different types of trade and auxiliaries to trade. ● Examine the role of commerce- trade and auxiliaries to trade.
Business risk-Concept	<ul style="list-style-type: none"> ● Understand the concept of risk as a special characteristic of business. ● Examine the nature and causes of business risks.

Unit 2: Forms of Business organizations

Sole Proprietorship-Concept, merits and limitations.	<ul style="list-style-type: none"> ● List the different forms of business organizations and understand their meaning. ● Identify and explain the concept, merits and limitations of Sole Proprietorship.
Partnership-Concept, types, merits and limitation of partnership, registration of a partnership firm, partnership deed. Types of partners	<ul style="list-style-type: none"> ● Identify and explain the concept, merits and limitations of a Partnership firm. ● Understand the types of partnership on the basis of duration and on the basis of liability. ● State the need for registration of a partnership firm. ● Discuss types of partners –active, sleeping, secret, nominal and partner by estoppel.
Hindu Undivided Family Business: Concept	<ul style="list-style-type: none"> ● Understand the concept of Hindu Undivided Family Business.
Cooperative Societies-Concept, types, merits, and limitations.	<ul style="list-style-type: none"> ● Identify and explain the concept, merits and limitations of Cooperative Societies. ● Understand the concept of consumers, producers, marketing, farmers, credit and housing co-operatives.
Company - Concept, merits and limitations; Types: Private, Public and One Person Company – Concept	<ul style="list-style-type: none"> ● Identify and explain the concept, merits and limitations. ● Understand the concept of private and public companies and one person company. ● Understand the meaning of one person company.

	<ul style="list-style-type: none"> ● Distinguish between a private company and a public company.
Formation of company - stages, important documents to be used in the formation of a company	<ul style="list-style-type: none"> ● Highlight the stages in the formation of a company. ● Discuss the important documents used in the various stages in the formation of a company.

Unit 3: Public, Private and Global Enterprises

Public sector and private sector enterprises – Concept	<ul style="list-style-type: none"> ● Develop an understanding of Public sector and private sector enterprises
Forms of public sector enterprises: Departmental Undertakings, Statutory Corporations and Government Company.	<ul style="list-style-type: none"> ● Identify and explain the features, merits and limitations of different forms of public sector enterprises

Unit 4: Business Services

Business services – meaning and types. Banking: Types of bank accounts - savings, current, recurring, fixed deposit and multiple option deposit account	<ul style="list-style-type: none"> ● Understand the meaning and types of business services. ● Develop an understanding of different types of bank accounts.
Banking services with particular reference to Bank Draft, Bank Overdraft, Cash credit. E-Banking meaning, Types of digital payments	<ul style="list-style-type: none"> ● Develop an understanding of the different services provided by banks
Insurance – Principles. Types – life, health, fire and marine insurance– concept	<ul style="list-style-type: none"> ● Understand Utmost Good Faith, Insurable Interest, Indemnity, Contribution, Doctrine of Subrogation and CausaProxima as principles of insurance ● Discuss different types of insurance-life, health, fire, marineinsurance

Unit 5: Emerging Modes of Business

E - business: concept, scope and benefits	<ul style="list-style-type: none"> ● Give the meaning of e-business. ● Discuss the scope of e-business. ● Appreciate the benefits of e-business ● Distinguish e-business from traditional business.
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Unit 6: Social Responsibility of Business and Business Ethics

Concept of social responsibility	<ul style="list-style-type: none"> ● State the concept of social responsibility.
Case for social responsibility	<ul style="list-style-type: none"> ● Examine the case for social responsibility.
Responsibility towards owners, investors, consumers, employees, government and community.	<ul style="list-style-type: none"> ● Identify social responsibilities towards different interest groups.
Role of business in environment protection	<ul style="list-style-type: none"> ● Appreciate the role of business in environment protection.

PROJECT WORK IN BUSINESS STUDIES (ONLY ONE PROJECT): GUIDELINES AS GIVEN IN CLASS XII CURRICULUM

TERM - 2 SUBJECTIVE QUESTION PAPER			
	Theory - 40 Marks	DURATION:- 2 Hrs	
Part B	Finance and Trade	PERIODS	MARKS
7	Sources of Business Finance	28	20
8	Small Business and Entrepreneurship Development	16	
9	Internal Trade	22	20
10	International Business	04	
	TOTAL	70	40
	PROJECT WORK (PART - 2)		10

TERM II

Part B: Finance and Trade

Unit 7: Sources of Business Finance

Business finance: Concept and Importance	<ul style="list-style-type: none"> State the meaning, nature and importance of business finance.
Owners' funds- equity shares, preferences share, retained earnings, Global Depository receipt (GDR), American Depository Receipt (ADR) and International Depository Receipt (IDR) – concept	<ul style="list-style-type: none"> Classify the various sources of funds into owners' funds. State the meaning of owners' funds. Understand the meaning of Global Depository receipts, American Depository Receipts and International Depository Receipts.
Borrowed funds: debentures and bonds, loan from financial institution and commercial banks, public deposits, trade credit and	<ul style="list-style-type: none"> State the meaning of borrowed funds. Discuss the concept of debentures, bonds, loans from financial institutions and commercial banks, Trade credit Distinguish between owners' funds and borrowed funds.

Unit 8: Small Business and Entrepreneurship Development

Entrepreneurship Development (ED): Concept and Need. Process of Entrepreneurship Development: Start-up India Scheme, ways to fund startup. Intellectual Property Rights and Entrepreneurship	<ul style="list-style-type: none"> Understand the concept and need of Entrepreneurship Development (ED), Intellectual Property Rights Understand the process of Entrepreneurship Development
Small scale enterprise – Definition	<ul style="list-style-type: none"> Understand the definition of small enterprises
Role of small business in India with special reference to rural areas	<ul style="list-style-type: none"> Discuss the role of small scale business in India with special reference to rural areas
Government schemes and agencies for small scale industries: National Small Industries Corporation (NSIC) and District Industrial Centre (DIC) with special reference to rural, backward areas	<ul style="list-style-type: none"> Appreciate various schemes of NSIC and DIC with special reference to rural, backward area.

Unit 9: Internal Trade

Internal trade - meaning and types of services rendered by a wholesaler and a retailer	<ul style="list-style-type: none">● State the meaning and types of internal trade.● Appreciate the services of wholesalers and retailers.
Large scale retailers-Departmental stores, chain stores – concept	<ul style="list-style-type: none">● Highlight the distinctive features of departmental stores, chain stores

Unit 10: International Trade

International trade: concept and benefits	<ul style="list-style-type: none">● Understand the concept of international trade.● Describe the benefit of international trade to the nation and business firms.
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PROJECT WORK IN BUSINESS STUDIES (ONLY ONE PROJECT): GUIDELINES AS GIVEN IN CLASS XII CURRICULUM

BUSINESS STUDIES (CODE -054)

CLASS–XII (2021-22) TERM WISE CURRICULUM

Units	TERM 1- MCQ BASED QUESTION PAPER THEORY - 40 MARKS DURATION: 90 MINUTES	Periods	Marks
Part A	Principles and Functions of Management		
1.	Nature and Significance of Management	12	16
2	Principles of Management	11	
3	Business Environment	08	
4	Planning	08	14
5	Organising	10	
	Total	49	30
Part B	Business Finance and Marketing		
11	Marketing Management	24	10
	Total	24	10
	Total	73	40
	PROJECT WORK (PART 1)		10

Term 1:

Part A: Principles and Functions of Management

Unit 1: Nature and Significance of Management

Concept	After going through this unit, the student/ learner would be able to:
Management - concept, objectives, and importance	<ul style="list-style-type: none"> ● Understand the concept of management. ● Explain the meaning of 'Effectiveness and Efficiency. ● Discuss the objectives of management. ● Describe the importance of management.
Management as Science, Art and Profession	<ul style="list-style-type: none"> ● Examine the nature of management as a science, art and profession.
Levels of Management	<ul style="list-style-type: none"> ● Understand the role of top, middle and lower levels of management
Management functions-planning, organizing, staffing, directing and controlling	<ul style="list-style-type: none"> ● Explain the functions of management
Coordination- concept and importance	<ul style="list-style-type: none"> ● Discuss the concept and characteristics of coordination. ● Explain the importance of coordination.

Unit 2: Principles of Management

Principles of Management- concept and significance	<ul style="list-style-type: none">• Understand the concept of principles of management.• Explain the significance of management principles.
Fayol's principles of management	<ul style="list-style-type: none">• Discuss the principles of management developed by Fayol.
Taylor's Scientific management- principles and techniques	<ul style="list-style-type: none">• Explain the principles and techniques of 'Scientific Management'.

Unit 3: Business Environment

Business Environment- concept and importance	<ul style="list-style-type: none">• Understand the concept of 'Business Environment'.• Describe the importance of business environment
Dimensions of Business Environment- Economic, Social, Technological, Political and Legal	<ul style="list-style-type: none">• Describe the various dimensions of 'Business Environment'.

Unit 4: Planning

Planning: Concept, importance and limitation	<ul style="list-style-type: none">• Understand the concept of planning.• Describe the importance of planning.• Understand the limitations of planning.
Planning process	<ul style="list-style-type: none">• Describe the steps in the process of planning.

Unit 5: Organising

Organising: Concept and importance	<ul style="list-style-type: none">• Understand the concept of organizing as a structure and as a process.• Explain the importance of organising.
Organising Process	<ul style="list-style-type: none">• Describe the steps in the process of organizing
Structure of organisation- functional and divisional concept	<ul style="list-style-type: none">• Describe functional and divisional structures of organisation.
Delegation: concept, elements and importance	<ul style="list-style-type: none">• Understand the concept of delegation.• Describe the elements of delegation.• Appreciate the importance of Delegation.
Decentralization: concept and importance	<ul style="list-style-type: none">• Understand the concept of decentralisation.• Explain the importance of decentralisation.• Differentiate between delegation and decentralisation.

Part B: Business Finance and Marketing

Unit 11: Marketing

Marketing – Concept, functions and philosophies - Product, Price and Standard	<ul style="list-style-type: none">• Understand the concept of marketing.• Discuss the functions of marketing.
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	<ul style="list-style-type: none"> ● Explain the marketing philosophies.
Marketing Mix – Concept and elements	<ul style="list-style-type: none"> ● Understand the concept of marketing mix. ● Describe the elements of the marketing mix.
Product - branding, labelling and packaging – Concept	<ul style="list-style-type: none"> ● Understand the concept of product as an element of marketing mix. ● Understand the concepts of branding, labelling and packaging.
Price - Concept, Factors determining price	<ul style="list-style-type: none"> ● Understand the concept of price as an element of marketing mix. ● Describe the factors determining price of a product.
Physical Distribution – concept	<ul style="list-style-type: none"> ● Understand the concept of physical distribution.
Promotion – Concept and elements; Advertising, Personal Selling, Sales Promotion and Public Relations	<ul style="list-style-type: none"> ● Understand the concept of promotion as an element of marketing mix. ● Describe the elements of the promotion mix. ● Understand the concept of advertising and personal selling ● Understand the concept of sales promotion. ● Discuss the concept of public relations.

PROJECT WORK IN BUSINESS STUDIES (ONLY ONE PROJECT): GUIDELINES AS GIVEN IN CLASS XII CURRICULUM

BUSINESS STUDIES-(CODE-054)
CLASS–XII (2021-22) - TERM WISE CURRICULUM

Units	TERM-2 SUBJECTIVE QUESTION PAPER Theory- 40 Marks DURATION:-2 Hrs	Periods	Marks
Part A	Principles and Functions of Management		
6	Staffing	13	20
7	Directing	09	
8	Controlling	07	
	Total	29	20
Part B	Business Finance and Marketing		
9	Financial Management	20	15
10	Financial Markets	18	
12	Consumer Protection	05	5
	Total	43	20
	Total	72	40
	PROJECT WORK (PART – 2)		10

Term 2: Principles and Functions of Management

Unit 6: Staffing

Staffing: Concept and importance	<ul style="list-style-type: none"> Understand the concept of staffing. Explain the importance of staffing
Staffing process	<ul style="list-style-type: none"> Describe the steps in the process of staffing
Recruitment process	<ul style="list-style-type: none"> Understand the meaning and steps in the process of recruitment. Discuss the sources of recruitment.
Selection – process	<ul style="list-style-type: none"> Understand the meaning of selection. Describe the steps involved in the process of selection.
Training and Development - Concept and importance, Methods of training - on the job and off the job - vestibule training, apprenticeship training and internship training	<ul style="list-style-type: none"> Understand the concept of training and development. Appreciate the importance of training to the organisation and to the employees. Discuss on the job and off the job methods of training. Discuss the meaning of vestibule training, apprenticeship training and internship training. Differentiate between training and development.

Unit 7: Directing

Directing: Concept and importance	<ul style="list-style-type: none">• Describe the concept of directing.• Discuss the importance of directing
Elements of Directing	<ul style="list-style-type: none">• Describe the various elements of directing
Motivation - concept, Maslow's hierarchy of needs, Financial and non-financial incentives	<ul style="list-style-type: none">• Understand the concept of motivation.• Develop an understanding of Maslow's Hierarchy of needs.• Discuss the various financial and non-financial incentives.
Leadership - concept, styles - authoritative, democratic and laissez faire	<ul style="list-style-type: none">• Understand the concept of leadership.• Understand the various styles of leadership.
Communication - concept, formal and informal communication;	<ul style="list-style-type: none">• Understand the concept of communication• Discuss the concept of formal and informal communication.

Unit 8: Controlling

Controlling - Concept and importance	<ul style="list-style-type: none">• Understand the concept of controlling.• Explain the importance of controlling.
Steps in process of control	<ul style="list-style-type: none">• Discuss the steps in the process of controlling.

Part B: Business Finance and Marketing

Unit 9: Financial Management

Financial Management: Concept, role and objectives	<ul style="list-style-type: none">• Understand the concept of financial management.• Explain the role of financial management in an organisation.• Discuss the objectives of financial management
Financial decisions: investment, financing and dividend- Meaning and factors affecting	<ul style="list-style-type: none">• Discuss the three financial decisions and the factors affecting them.
Financial Planning - concept and importance	<ul style="list-style-type: none">• Describe the concept of financial planning.• Explain the importance of financial planning.
Capital Structure – concept and factors affecting capital structure	<ul style="list-style-type: none">• Understand the concept of capital structure.• Describe the factors determining the choice of an appropriate capital structure of a company.
Fixed and Working Capital - Concept and factors affecting their requirements	<ul style="list-style-type: none">• Understand the concept of fixed and working capital.• Describe the factors determining the requirements of fixed and working capital.

Unit 10: Financial Markets

Financial Markets: Concept, Functions and types	<ul style="list-style-type: none"> • Understand the concept of the financial market. • Explain the functions of the financial market. • Understand capital market and money market as types of financial markets.
Money market and its instruments	<ul style="list-style-type: none"> • Understand the concept of the money market. • Describe the various money market instruments.
Capital market: Concept, types (primary and secondary), methods of floatation in the primary market	<ul style="list-style-type: none"> • Discuss the concept of capital market. • Explain primary and secondary markets as types of capital market. • Differentiate between capital market and money market. • Discuss the methods of floating new issues in the primary market. • Distinguish between primary and secondary markets.
Stock Exchange – Meaning, Functions and trading procedure	<ul style="list-style-type: none"> • Give the meaning of a stock exchange. • Explain the functions of a stock exchange. • Discuss the trading procedure in a stock exchange. • Give the meaning of depository services and demat account as used in the trading procedure of securities.
Securities and Exchange Board of India (SEBI) - objectives and functions	<ul style="list-style-type: none"> • State the objectives of SEBI. • Explain the functions of SEBI.

Unit 12: Consumer Protection

Concept and importance of consumer protection	<ul style="list-style-type: none"> • Understand the concept of consumer protection. • Describe the importance of consumer protection. • Discuss the scope of Consumer Protection Act, 2019
<p>The Consumer Protection Act, 2019: Source: http://egazette.nic.in/WriteReadData/2019/210422.pdf</p> <p>Meaning of consumer Rights and responsibilities of consumers Who can file a complaint? Redressal machinery Remedies available</p>	<p>Understand the concept of a consumer according to the Consumer Protection Act, 2019.</p> <ul style="list-style-type: none"> • Explain the consumer rights • Understand the responsibilities of consumers • Understand who can file a complaint and against whom? • Discuss the legal redressal machinery under Consumer Protection Act, 2019. • Examine the remedies available to the consumer under Consumer Protection Act, 2019s
Consumer awareness - Role of consumer organizations and Non-Governmental Organizations (NGOs)	<ul style="list-style-type: none"> • Describe the role of consumer organizations and NGOs in protecting consumers' interests.

PROJECT WORK IN BUSINESS STUDIES (ONLY ONE PROJECT): GUIDELINES AS GIVEN IN CLASS XII CURRICULUM

GUIDELINES FOR PROJECT WORK IN BUSINESS STUDIES IN CLASSES XI & XII

MARKS: 20 Marks (10 + 10 MARKS FOR TERM 1 AND TERM 2)

Introduction

The course in Business Studies is introduced at Senior School level to provide students with a sound understanding of the principles and practices bearing in business (trade and industry) as well as their relationship with the society. Business is a dynamic process that brings together technology, natural resources and human initiative in a constantly changing global environment. With the purpose to help them understand the framework within which a business operates, and its interaction with the social, economic, technological and legal environment, the CBSE has introduced Project Work in the Business Studies Syllabus for Classes XI and XII. The projects have been designed to allow students to appreciate that business is an integral component of society and help them develop an understanding of the social and ethical issues concerning them.

The project work also aims to empower the teacher to relate all the concepts with what is happening around the world and the student's surroundings, making them appear more clear and contextual. This will enable the student to enjoy studies and use his free time effectively in observing what's happening around.

By means of Project Work the students are exposed to life beyond textbooks giving them opportunities to refer materials, gather information, analyze it further to obtain relevant information and decide what matter to keep.

One Project to be done throughout the session, as per the existing scheme.

1. The objectives of the project work:

Objectives of project work are to enable learners to:

- probe deeper into personal enquiry ,initiate action and reflect on knowledge and skills, views etc. acquired during the course of class XI-XII .
- analyse and evaluate real world scenarios using theoretical constructs and arguments
- demonstrate the application of critical and creative thinking skills and abilities to produce an independent and extended piece of work
- follow up aspects in which learners have interest
- develop the communication skills to argue logically

2. Role of the teacher:

The teacher plays a critical role in developing the thinking skills of the learners. A teacher should:

- help each learner select the topic after detailed discussions and deliberations of the topic;
- play the role of a facilitator to support and monitor the project work of the learner through periodic discussions;
- guide the research work in terms of sources for the relevant data;

- ensure that students must understand the relevance and usage of primary evidence and other sources in their projects and duly acknowledge the same;
- ensure that the students are able to derive a conclusion from the content; cite the limitations faced during the research and give appropriate references used in doing the research work.
- educate learners about plagiarism and the importance of quoting the source of the information to ensure authenticity of research work.
- prepare the learner for the presentation of the project work.
- arrange a presentation of the project file.

3. Steps involved in the conduct of the project:

Students may work upon the following lines as a suggested flow chart:

Choose a title/topic

Collection of the research material/data

Organization of material/data

Present material/data

Analysing the material/data for conclusion

Draw the relevant conclusion

Presentation of the Project Work

- The project work can be in the form of PowerPoint Presentation/Exhibition/Skit /albums/files/song and dance or culture show /story telling/debate/panel discussion, paper presentation and so on. Any of these activities which are suitable to visually impaired/differently-abled candidates can be performed as per the choice of the student.

4. Expected Checklist for the Project Work:

- Introduction of topic/title
- Identifying the causes, events, consequences and/or remedies
- Various stakeholders and effect on each of them
- Advantages and disadvantages of situations or issues identified
- Short-term and long-term implications of strategies suggested in the course of research
- Validity, reliability, appropriateness and relevance of data used for research work and for presentation in the project file
- Presentation and writing that is succinct and coherent in project file
- Citation of the materials referred to, in the file in footnotes, resources section, bibliography etc.

5. Term-Wise Assessment of Project Work:

- Project Work has broadly the following phases: Synopsis/ Initiation, Data Collection, Data Analysis and Interpretation, Conclusion.
- The aspects of the project work to be covered by students can be assessed during the two terms.

TERM-I PROJECT WORK (Part 1): 10 Marks

The teacher will assess the progress of the project work in the term I in the following manner:

Month	Periodic Work	Assessment Rubrics	Marks
1-3 July-September	Instructions about Project Guidelines, Background reading Discussions on Theme and Selection of the Final Topic, Initiation/ Synopsis	Introduction, Statement of Purpose/Need and Objective of the Study, Hypothesis/Research Question, Review of Literature, Presentation of Evidence, Key Words, Methodology, Questionnaire, Data Collection.	5
4-5 October-November	Planning and organisation: forming an action plan, feasibility or baseline study, Updating/modifying the action plan, Data Collection	Significance and relevance of the topic; 5 challenges encountered while conducting the research.	5
October-November	Midterm Assessment by internal examiner		10

TERM- II - PROJECT WORK (Part 2): 10 Marks

The teacher will assess the progress of the project work in the term II in the following manner:

Month	Periodic Work	Assessment Rubrics	Marks
6-7 December-January	Content/data analysis and interpretation. Conclusion, Limitations, Suggestions, Bibliography, Annexures and Overall Presentation of the project.	Content analysis and its relevance in the current scenario. Conclusion, Limitations, Bibliography, Annexures and Overall Presentation.	5
8 January/February	Final Assessment and VIVA by both Internal and External Examiners	External/ Internal Viva based on the project	5
		TOTAL	10

6. Viva-Voce

- At the end of the stipulated term, each learner will present the research work in the Project File to the External and Internal examiner.
- The questions should be asked from the Research Work/ Project File of the learner.
- The Internal Examiner should ensure that the study submitted by the learner is his/her own original work.
- In case of any doubt, authenticity should be checked and verified.

CLASS XI

The teacher should help students to identify any one project from the given topics.

The project may be done in a group or individually.

20 marks assigned for Project Work will be divided into two terms for 10 marks each.

I. Project One: Field Visit

The objective of introducing this project among the students is to give a first hand experience to them regarding the different types of business units operating in their surroundings, to observe their features and activities and relate them to the theoretical knowledge given in their textbooks. The students should select a place of field visit from the following: – (Add more as per local area availability.)

1. Visit to a Handicraft unit.
2. Visit to an Industry.
3. Visit to a Wholesale market (vegetables, fruits, flowers, grains, garments, etc.)
4. Visit to a Departmental store.
5. Visit to a Mall.

The following points should be kept in mind while preparing this visit.

1. Select a suitable day free from rush/crowd with lean business hours.
2. The teacher must visit the place first and check out on logistics. It's better to seek permission from the concerned business- incharge.
3. Visit to be discussed with the students in advance. They should be encouraged to prepare a worksheet containing points of observation and reporting.
4. Students may carry their cameras (at their own risk) with prior permission for collecting evidence of their observations.

1. Visit to a Handicraft Unit

The purpose of visiting a Handicraft unit is to understand nature and scope of its business, stakeholders involved and other aspects as outlined below

- a) The raw material and the processes used in the business: People /parties/firms from which they obtain their raw material.
- b) The market, the buyers, the middlemen, and the areas covered. c) The countries to which exports are made.
- d) Mode of payment to workers, suppliers etc.

- e) Working conditions.
- f) Modernization of the process over a period of time.
- g) Facilities, security and training for the staff and workers.
- h) Subsidies available/ availed.
- i) Any other aspect that the teachers deem fit.

2. Visit to an Industry.

The students are required to observe the following:

- a) Nature of the business organisation.
- b) Determinants for location of business unit.
- c) Form of business enterprise: Sole Proprietorship, Partnership, Undivided Hindu Family, Joint Stock Company (a Multinational Company).
- d) Different stages of production/process
- e) Auxiliaries involved in the process.
- f) Workers employed, method of wage payment, training programmes and facilities available.
- g) Social responsibilities discharged towards workers, investors, society, environment and government.
- h) Levels of management.
- i) Code of conduct for employers and employees.
- j) Capital structure employed- borrowed v/s owned.
- k) Quality control, recycling of defective goods.
- l) Subsidies available/availed.
- m) Safety Measures employed.
- n) Working conditions for labour in observation of Labour Laws.
- o) Storage of raw material and finished goods.
- p) Transport management for employees, raw material and finished goods.
- q) Functioning of various departments and coordination among them (Production, Human Resource, Finance and Marketing)
- r) Waste Management.
- s) Any other observation.

3. Visit to a wholesale market: vegetables/fruits/flowers/grains/garments etc.

The students are required to observe the following:

- a) Sources of merchandise.
- b) Local market practices.
- c) Any linked up businesses like transporters, packagers, money lenders, agents, etc.
- d) Nature of the goods dealt in.
- e) Types of buyers and sellers.
- f) Mode of the goods dispersed, minimum quantity sold, types of packaging employed.
- g) Factors determining the price fluctuations.
- h) Seasonal factors (if any) affecting the business.
- i) Weekly/ monthly non-working days.
- j) Strikes, if any- causes thereof.
- k) Mode of payments.
- l) Wastage and disposal of dead stock.
- m) Nature of price fluctuations, reason thereof.
- n) Warehousing facilities available\availed.
- o) Any other aspect.

4. Visit to a Departmental store

The students are required to observe the following:

- a) Different departments and their layout.
- b) Nature of products offered for sale.
- c) Display of fresh arrivals.
- d) Promotional campaigns.
- e) Spaces and advertisements.
- f) Assistance by Sales Personnel.
- g) Billing counter at store – Cash, Credit Card/ Debit Card, swipe facility. Added attractions and facilities at the counter.
- h) Additional facilities offered to customers
- i) Any other relevant aspect.

5. Visit to a Mall.

The students are required to observe the following:

- a) Number of floors, shops occupied and unoccupied.
- b) Nature of shops, their ownership status
- c) Nature of goods dealt in: local brands, international brands,
- d) Service business shops- Spas, gym, saloons etc.
- e) Rented spaces, owned spaces,
- f) Different types of promotional schemes.
- g) Most visited shops.
- h) Special attractions of the Mall- Food court, Gaming zone or Cinema etc.
- i) Innovative facilities.
- j) Parking facilities. Teachers may add more to the list.

II. Project Two: Case Study on a Product

- a) Take a product having seasonal growth and regular demand with which students can relate. For example,
 - Apples from Himachal Pradesh, Kashmir.
 - Oranges from Nagpur,
 - Mangoes from Maharashtra/U.P./Bihar/Andhra Pradesh etc.
 - Strawberries from Panchgani,
 - Aloe vera from Rajasthan,
 - Walnuts/almonds from Kashmir,
 - Jackfruit from South,
 - Guavas from Allahabad,
 - Pineapples from North East India,
 - Tea from Assam,
 - Orchids from Sikkim and Meghalaya,
 - Pottery of Manipur,
 - Fishes from coastal areas.

Students may develop a Case Study on the following lines:

- (i) Research for change in price of the product. For example, apples in Himachal Pradesh during plucking and non plucking season.
- (ii) Effect on prices in the absence of an effective transport system.
- (iii) Effect on prices in the absence of suitable warehouse facilities.
- (iv) Duties performed by the warehouses.
- (v) Demand and supply situation of the product during harvesting season, prices near the place of origin and away.

Students may be motivated to find out the importance of producing and selling these products and their processed items along with the roles of Transport, Warehousing, Advertising, Banking, Insurance, Packaging, Wholesale selling, Retailing, Co-operative farming, Co-operative marketing etc.

The teacher may develop the points for other projects on similar lines for students to work on.

The teacher may assign this project as 'group' project and may give different products to different groups. It could conclude in the form of an exhibition.

III. Project Three: Aids to Trade

Taking any one AID TO TRADE, for example Insurance and gathering information on following aspects

1. History of Insurance Lloyd's contribution.
2. Development of regulatory Mechanism.
3. Insurance Companies in India
4. Principles of Insurance.
5. Types of Insurance. Importance of insurance to the businessmen.
6. Benefits of crop, orchards, animal and poultry insurance to the farmers.
7. Terminologies used (premium, face value, market value, maturity value, surrender value) and their meanings.
8. Anecdotes and interesting cases of insurance. Reference of films depicting people committing fraudulent acts with insurance companies.
9. Careers in Insurance.

Teachers develop such aspects for other aids to trade.

IV. Project Four: Import /Export Procedure

Any one from the following

1. Import /Export procedure

The students should identify a product of their city/country which is imported /exported. They are required to find the details of the actual import/export procedure. They may take help from the Chambers of Commerce, Banker, existing Importers/Exporters, etc.

They should find details of the procedure and link it with their Text knowledge.

The specimens of documents collected should be pasted in the Project file with a brief description of each. They may also visit railway godowns/dockyards/ transport agencies and may collect pictures of the same.

Presentation and submission of project report.

At the end of the stipulated term, each student will prepare and submit his/her project report. Following essentials are required to be fulfilled for its preparation and submission.

1. The total project will be in a file format, consisting of the recordings of the value of shares and the graphs.
2. The project will be handwritten.
3. The project will be presented in a neat folder.
4. The project report will be developed in the following sequence-
 - Cover page should project the title, student information, school and year.
 - List of contents.

- Acknowledgements and preface (acknowledging the institution, the news papers read, T.V. channels viewed, places visited and persons who have helped).
- Introduction.
- Topic with suitable heading.
- Planning and activities done during the project, if any.
- Observations and findings while conducting the project.
- News paper clippings to reflect the changes of share prices.
- Conclusions (summarised suggestions or findings, future scope of study).
- Appendix (if needed).
- Teachers report.
- Teachers will initial preface page.
- At the completion of the evaluation of the project, it will be punched in the centre so that the report cannot be reused but is available for reference only.
- The projects will be returned after evaluation. The school may keep the best projects.

V. Project Five: A visit to any State Emporium (other than your school state).

The purpose of this project is that it leads to -

- Development of deeper understanding of the diversity of products in the states like Assam, Tripura, Nagaland, Mizoram, Manipur, Meghalaya, Sikkim, Arunachal Pradesh, Jammu and Kashmir, Kerala, Chhattisgarh, Telangana, Andhra Pradesh and other states of the country.
- Sensitization and orientation of students about other states, their trade, business and commerce,
- Understanding the cultural and socio-economic aspects of the state by the students,
- Developing the understanding of role of folk art, artisanship and craftsmanship of the state in its growth and economic development
- Understanding the role of gifts of nature and natural produce in the development of trade, business and commerce
- Understanding the role of vocational skills and abilities on the livelihood of artisans/ craftsman
- Understanding of entrepreneurial skills and abilities of the artisans/craftsman
- Understanding of the unemployment problem of the state and role of art and craft of the state in generating employment opportunities
- Value aspect -
- Sense of gratitude - by appreciating the contributions made by others in the betterment of our lives
- Appreciating the dignity of work
- Sensitivity towards social, cultural, ethical and religious differences Benefits of social harmony and peace
- Understanding and appreciating the unity in diversity in India
- Appreciating differences in race, skin colour, languages, religion, habits, festivals, clothing coexistence

Presentation and Submission of Project Report

At the end of the stipulated term, each student will prepare and submit his/her project report.

Following essentials are required to be fulfilled for its preparation and submission.

1. Nature of the business organisation (emporium)
2. Determinants for location of the concerned emporium

3. Is the space rented or owned
4. Nature of the goods dealt in
5. Sources of merchandise of the emporium
6. Role of co-operative societies in the manufacturing and/or marketing of the merchandise
7. Role of gifts of nature or natural produce in the development of goods/merchandise
8. Types of buyers and sellers
9. Modes of goods dispersed, minimum quantity sold and type of carrying bag or package used for delivery of the products sold
10. Factors determining the pricing at the emporium
11. Comparison between the prices of goods available at the emporium with the prices in the open market. Also highlight probable causes of variations if any.
12. Kind of raw material available naturally, used in making the products
13. The technique used in making the products i.e., hand made or machine made
14. Has the child labour being used in making the products sold at the emporium
15. Are the products eco-friendly, in terms of manufacturing, disposal and packing
16. Seasonal factors if any affecting the business of the emporium
17. Weekly/ Monthly non-working days
18. Mode of billing and payments - Cash, Credit Card/ Debit Card, Swipe facility.
19. Does the emporium sell its merchandise in installment / deferred payment basis
20. Do they provide home delivery and after sales services?
21. Different types of promotional campaigns / schemes
22. Assistance by Sales Personnel
23. Export orientation of this emporium and procedure used
24. Policies related to damaged/ returned goods
25. Any government facility available to the emporium
26. Warehousing facilities available / availed
27. Impact of tourism on the business of emporium
28. Additional facility offered to customers
29. Any Corporate Social Responsibility (CSR) assumed by the emporium
30. Contribution made by the emporium to its locality

CLASS XII

The teacher should help students to identify any one project from the given topics.

Students are supposed to select one unit out of four and are required to make only ONE project from the selected unit.

20 marks assigned for Project Work will be divided into two terms for 10 marks each.

I. Project One: Elements of Business Environment

The teachers should help the students in selecting any one element of the following:

1. Changes witnessed over the last few years on mode of packaging and its economic impact. The teacher may guide the students to identify the following changes:
 - a) The changes in transportation of fruits and vegetables such as cardboard crates being used in place of wooden crates, etc. Reasons for above changes.
 - b) Milk being supplied in glass bottles, later in plastic bags and now in tetrapack and through vending machines.
 - c) Plastic furniture [doors and stools] gaining preference over wooden furniture.
 - d) The origin of cardboard and the various stages of changes and growth.
 - e) Brown paper bags packing recycled paper bags to plastic bags and cloth bags.
 - f) Reuse of packaging [bottles, jars and tins] to attract customers for their products.

- g) The concept of pyramid packaging for milk.
- h) Cost being borne by the consumer/manufacturer.
- i) Packaging used as means of advertisements.

2. The reasons behind changes in the following:

Coca – Cola and Fanta in the seventies to Thumbs up and Campa Cola in the eighties to Pepsi and Coke in the nineties.

The teacher may guide the students to the times when India sold Coca Cola and Fanta which were being manufactured in India by the foreign companies.

The students may be asked to enquire about

- a) Reasons for stopping the manufacturing of the above mentioned drinks in India THEN.
- b) The introduction of Thums up and Campa cola range.
- c) Re-entry of Coke and introduction of Pepsi in the Indian market.
- d) Factors responsible for the change.
- e) Other linkages with the above.
- f) Leading brands and the company having the highest market share.
- g) Different local brands venturing in the Indian market.
- h) The rating of the above brands in the market.
- i) The survival and reasons of failure in competition with the international brands.
- j) Other observations made by the students

The teacher may develop the following on the above lines

- 3. Changing role of the women in the past 25 years relating to joint families, nuclear families, women as bread earners of the family, changes in the requirement trend of mixers, washing machines, microwave and standard of living.
- 4. The changes in the pattern of import and export of different Products.
- 5. The trend in the changing interest rates and their effect on savings.
- 6. A study on child labour laws, its implementation and consequences.
- 7. The state of 'anti plastic campaign,' the law, its effects and implementation.
- 8. The laws of mining /setting up of industries, rules and regulations, licences required for running that business.
- 9. Social factors affecting acceptance and rejection of an identified product. (Dish washer, Atta maker, etc)
- 10. What has the effect of change in the environment on the types of goods and services?
The students can take examples like:
 - a) Washing machines, microwaves, mixers and grinder.
 - b) Need for crèche, day care centre for young and old.
 - c) Ready to eat food, eating food outside, and tiffin centres.
- 11. Change in the man-machine ratio with technological advances resulting in change of cost structure.
- 12. Effect of changes in the technological environment on the behaviour of employees.

II. Project Two: Principles of Management

The students are required to visit any one of the following:

- 1. A departmental store.
- 2. An Industrial unit.
- 3. A fast food outlet.
- 4. Any other organisation approved by the teacher.

They are required to observe the application of the general Principles of management advocated by Fayol.

Fayol's principles

- 1. Division of work.

2. Unity of command.
3. Unity of direction.
4. Scalar chain
5. Espirit de corps
6. Fair remuneration to all.
7. Order.
8. Equity.
9. Discipline
10. Subordination of individual interest to general interest.
11. Initiative.
12. Centralisation and decentralisation.
13. Stability of tenure.

OR

They may enquire into the application of scientific management techniques by F.W. Taylor in the unit visited.

Scientific techniques of management.

1. Functional foremanship.
2. Standardisation and simplification of work.
3. Method study.
4. Motion Study.
5. Time Study.
6. Fatigue Study
7. Differential piece rate plan.

Tips to teacher

- (i) The teacher may organize this visit.
- (ii) The teacher should facilitate the students to identify any unit of their choice and guide them to identify the principles that are being followed.
- (iii) Similarly they should guide the students to identify the techniques of scientific management implemented in the organisation.
- (iv) It may be done as a group activity.
- (v) The observations could be on the basis of
 - The different stages of division of work resulting to specialisation.
 - Following instructions and accountability of subordinates to higher authorities.
 - Visibility of order and equity in the unit.
 - Balance of authority and responsibility.
 - Communication levels and pattern in the organisation.
 - Methods and techniques followed by the organisation for unity of direction and coordination amongst all.
 - Methods of wage payments followed. The arrangements of fatigue study.
 - Derivation of time study.
 - Derivation and advantages of method study.
 - Organisational chart of functional foremanship.
 - Any other identified in the organisation
- vi. It is advised that students should be motivated to pick up different areas of visit. As presentations of different areas in the class would help in better understanding to the other students.
- vii. The students may be encouraged to develop worksheets. Teachers should help students to prepare observation tools to be used for undertaking the project.
Examples; worksheets, questionnaires, interviews and organisational charts etc.

III. Project Three: Stock Exchange

The purpose of this project is to teach school students the values of investing and utilising the stock market. This project also teaches important lessons about the economy, mathematics and financial responsibility.

The basis of this project is to learn about the stock market while investing a specified amount of fake money in certain stocks. Students then study the results and buy and sell as they see fit.

This project will also guide the students and provide them with the supplies necessary to successfully monitor stock market trends and will teach students how to calculate profit and loss on stock.

The project work will enable the students to:

- understand the topics like sources of business finance and capital market
- understand the concepts used in stock exchange
- inculcate the habit of watching business channels, reading business journals/newspapers and seeking information from their elders.

The students are expected to:

- a) Develop a brief report on History of Stock Exchanges in India. (your country)
- b) Prepare a list of at least 25 companies listed on a Stock Exchange.
- c) To make an imaginary portfolio totalling a sum of Rs. 50,000 equally in any of the 5 companies of their choice listed above over a period of twenty working days.

The students may be required to report the prices of the stocks on a daily basis and present it diagrammatically on the graph paper.

- They will understand the weekly holidays and the holidays under the Negotiable Instruments Act.

They will also come across terms like closing prices, opening prices, etc.

- During this period of recording students are supposed to distinctively record the daily and starting and closing prices of the week other days under the negotiable instrument act so that they acquire knowledge about closing and opening prices.
- The students may conclude by identifying the causes in the fluctuations of prices.

Normally it would be related to the front page news of the a business journal, for example,

- Change of seasons.
- Festivals.
- Spread of epidemic.
- Strikes and accidents
- Natural and human disasters.
- Political environment.
- Lack of faith in the government policies.
- Impact of changes in government policies for specific industry.
- International events.
- Contract and treaties at the international scene.
- Relations with the neighbouring countries.
- Crisis in developed countries, etc.

The students are expected to find the value of their investments and accordingly rearrange their portfolio. The project work should cover the following aspects;

1. Graphical presentation of the share prices of different companies on different dates.
2. Change in market value of shares due to change of seasons, festivals, natural and human disasters.

3. Change in market value of shares due to change in political environment/ policies of various countries/crisis in developed countries or any other reasons
4. Identify the top ten companies out of the 25 selected on the basis of their market value of shares.

It does not matter if they have made profits or losses.

IV. Project Four: Marketing

- | | |
|-------------------------|------------------------|
| 1. Adhesives | 40. Lipstick |
| 2. Air conditioners | 41. Microwave oven |
| 3. Baby diapers | 42. Mixers |
| 4. Bathing Soap | 43. Mobile |
| 5. Bathroom cleaner | 44. Moisturizer |
| 6. Bike | 45. Music player |
| 7. Blanket | 46. Nail polish |
| 8. Body Spray | 47. Newspaper |
| 9. Bread | 48. Noodles |
| 10. Breakfast cereal | 49. Pen |
| 11. Butter | 50. Pen drive |
| 12. Camera | 51. Pencil |
| 13. Car | 52. Pickles |
| 14. Cheese spreads | 53. Razor |
| 15. Chocolate | 54. Ready Soups |
| 16. Coffee | 55. Refrigerator |
| 17. Cosmetology product | 56. RO system |
| 18. Crayons | 57. Roasted snacks |
| 19. Crockery | 58. Salt |
| 20. Cutlery | 59. Sarees |
| 21. Cycle | 60. Sauces/ Ketchup |
| 22. DTH | 61. Shampoo |
| 23. Eraser | 62. Shaving cream |
| 24. e-wash | 63. Shoe polish |
| 25. Fairness cream | 64. Shoes |
| 26. Fans | 65. Squashes |
| 27. Fruit candy | 66. Suitcase/ airbag |
| 28. Furniture | 67. Sunglasses |
| 29. Hair Dye | 68. Tea |
| 30. Hair Oil | 69. Tiffin Wallah |
| 31. Infant dress | 70. Toothpaste |
| 32. Inverter | 71. Wallet |
| 33. Jams | 72. Washing detergent |
| 34. Jeans | 73. Washing machine |
| 35. Jewellery | 74. Washing powder |
| 36. Kurti | 75. Water bottle |
| 37. Ladies bag | 76. Water storage tank |
| 38. Ladies footwear | 77. Wipes |
| 39. Learning Toys | |

Any more as suggested by the teacher.

The teacher must ensure that the identified product should not be items whose consumption/use is discouraged by the society and government like alcohol products/pan masala and tobacco products, etc.

Identify one product/service from the above which the students may like to manufacture/provide [pre-assumption].

Now the students are required to make a project on the identified product/service keeping in mind the following:

1. Why have they selected this product/service?
2. Find out '5' competitive brands that exist in the market.
3. What permission and licences would be required to make the product?
4. What are your competitors' Unique Selling Propositions?[U.S.P.]?
5. Does your product have any range of details?
6. What is the name of your product?
7. Enlist its features.
8. Draw the 'Label' of your product.
9. Draw a logo for your product.
10. Draft a tagline.
11. What is the selling price of your competitor's product?
 - (i) Selling price to consumer
 - (ii) Selling price to retailer
 - (iii) Selling price to wholesaler

What is the profit margin in percentage to the

- Manufacturer.
- Wholesaler.
- Retailer.

12. How will your product be packaged?
13. Which channel of distribution are you going to use? Give reasons for selection?
14. Decisions related to warehousing, state reasons.
15. What is going to be your selling price?
 - (i) To consumer
 - (ii) To retailer
 - (iii) To wholesaler
16. List 5 ways of promoting your product.
17. Any schemes for
 - (i) The wholesaler
 - (ii) The retailer
 - (iii) The consumer
18. What is going to be your 'U.S.P'?
19. What means of transport will you use and why?
20. Draft a social message for your label.
21. What cost effective techniques will you follow for your product?
22. What cost effective techniques will you follow for your promotion plan?

At this stage the students will realise the importance of the concept of marketing mix and the necessary decision regarding the four P's of marketing.

- Product
- Place
- Price
- Promotion

On the basis of the work done by the students the project report should include the following:

1. Type of product /service identified and the (consumer/industries) process involved therein.
2. Brand name and the product.
3. Range of the product.
4. Identification mark or logo.
5. Tagline.
6. Labelling and packaging.
7. Price of the product and basis of price fixation.

8. Selected channels of distribution and reasons thereof.
9. Decisions related to transportation and warehousing. State reasons.
10. Promotional techniques used and starting reasons for deciding the particular technique.
11. Grading and standardisation

ECONOMICS (Code No. 030)

(2021-22)

Rationale

Economics is one of the social sciences, which has great influence on every human being. As economic life and the economy go through changes, the need to ground education in children's own experience becomes essential. While doing so, it is imperative to provide them opportunities to acquire analytical skills to observe and understand the economic realities.

At senior secondary stage, the learners are in a position to understand abstract ideas, exercise the power of thinking and to develop their own perception. It is at this stage, the learners are exposed to the rigour of the discipline of economics in a systematic way.

The economics courses are introduced in such a way that in the initial stage, the learners are introduced to the economic realities that the nation is facing today along with some basic statistical tools to understand these broader economic realities. In the later stage, the learners are introduced to economics as a theory of abstraction.

The economics courses also contain many projects and activities. These will provide opportunities for the learners to explore various economic issues both from their day-to-day life and also from issues, which are broader and invisible in nature. The academic skills that they learn in these courses would help to develop the projects and activities. The syllabus is also expected to provide opportunities to use information and communication technologies to facilitate their learning process.

Objectives:

- Understanding of some basic economic concepts and development of economic reasoning which the learners can apply in their day-to-day life as citizens, workers and consumers.
- Realisation of learners' role in nation building and sensitivity to the economic issues that the nation is facing today.
- Equipment with basic tools of economics and statistics to analyse economic issues. This is pertinent for even those who may not pursue this course beyond senior secondary stage.
- Development of understanding that there can be more than one view on any economic issue and necessary skills to argue logically with reasoning.

ECONOMICS (Code No. 030)
(2021-22)
CLASS XI - TERM-WISE CURRICULUM

Units	TERM 1 - MCQ BASED QUESTION PAPER		Marks
	Theory: 40 Marks	Time: 90 minutes	
Part A	Statistics for Economics		
	Introduction		4
	Collection, Organisation and Presentation of Data		9
	Statistical Tools and Interpretation – Arithmetic Mean, Median and Mode		10
	Sub Total		23
Part B	Introductory Microeconomics		
	Introduction		4
	Consumer's Equilibrium and Demand		13
	Sub Total		17
	Total		40 marks
Part C	Project Work (Part 1): 10 Marks		

Students would prepare only ONE project in the entire academic session, which is divided into 2 terms i.e. Term I and Term II.

TERM 1

Part A: Statistics for Economics

Unit 1: Introduction

What is Economics?

Meaning, scope, functions and importance of statistics in Economics

Unit 2: Collection, Organisation and Presentation of data

Collection of data - sources of data - primary and secondary; how basic data is collected with concepts of Sampling; methods of collecting data; some important sources of secondary data: Census of India and National Sample Survey Organisation.

Organisation of Data: Meaning and types of variables; Frequency Distribution.

Presentation of Data: Tabular Presentation and Diagrammatic Presentation of Data:

(i) Geometric forms (bar diagrams and pie diagrams), (ii) Frequency diagrams (histogram, polygon and Ogive) and (iii) Arithmetic line graphs (time series graph).

Unit 3: Statistical Tools and Interpretation

Measures of Central Tendency- Arithmetic mean, median and mode

Part B: Introductory Microeconomics

Unit 4: Introduction

Meaning of microeconomics and macroeconomics; positive and normative economics

What is an economy? Central problems of an economy: what, how and for whom to produce; opportunity cost.

Unit 5: Consumer's Equilibrium and Demand

Consumer's equilibrium - meaning of utility, marginal utility, law of diminishing marginal utility, conditions of consumer's equilibrium using marginal utility analysis.

Indifference curve analysis of consumer's equilibrium-the consumer's budget (budget set and budget line), preferences of the consumer (indifference curve, indifference map) and conditions of consumer's equilibrium.

Demand, market demand, determinants of demand, demand schedule, demand curve and its slope, movement along and shifts in the demand curve; price elasticity of demand - factors affecting price elasticity of demand; measurement of price elasticity of demand – percentage-change method.

Part C: Project in Economics - Guidelines as given in class XII curriculum

Units	TERM 2 - SUBJECTIVE QUESTION PAPER		Marks
	Theory: 40 Marks	Time: 2 Hours	
Part A	Statistics for Economics		
	Statistical Tools and Interpretation – Measures of Dispersion, Correlation, Index Number		17
	Sub		17
Part B	Introductory Microeconomics		
	Producer Behaviour and Supply		13
	Forms of Market and Price Determination under perfect competition with simple applications		10
	Sub Total		23
	Total		40 marks
Part C	Project Work (Part 2): 10 Marks		

Part A: Statistics for Economics

Unit 3: Statistical Tools and Interpretation

Measures of Dispersion - absolute dispersion (standard deviation); relative dispersion (coefficient of variation)

Correlation – meaning and properties, scatter diagram; Measures of correlation - Karl Pearson's method (two variables ungrouped data)

Introduction to Index Numbers - meaning, types - wholesale price index, consumer price index, uses of index numbers; Inflation and index numbers.

Part B: Introductory Microeconomics

Unit 6: Producer Behaviour and Supply

Meaning of Production Function – Short-Run and Long-Run Total Product, Average Product and Marginal Product.

Returns to a Factor

Cost: Short run costs - total cost, total fixed cost, total variable cost; Average cost; Average fixed cost, average variable cost and marginal cost-meaning and their relationships.

Revenue - total, average and marginal revenue - meaning and their relationship.

Supply, market supply, determinants of supply, supply schedule, supply curve and its slope, movements along and shifts in supply curve, price elasticity of supply; measurement of price elasticity of supply - percentage-change method.

Unit 7: Forms of Market and Price Determination under Perfect Competition with simple applications.

Perfect competition - Features; Determination of market equilibrium and effects of shifts in demand and supply.

Simple Applications of Demand and Supply: Price ceiling, price floor.

Part C: Project in Economics - Guidelines as given in class XII curriculum

ECONOMICS (Code No. 030)
(2021-22)
CLASS XII - TERM-WISE CURRICULUM

TERM 1 - MCQ BASED QUESTION PAPER	Marks	Periods
Theory: 40 Marks		
Time: 90 minutes		
Part A: Introductory Macroeconomics		
▪ Money and Banking	6	8
▪ Government Budget and the Economy	6	15
▪ Balance of Payments	6	7
Sub Total	18	30
Part B: Indian Economic Development		
▪ Development Experience (1947-90) and Economic Reforms since 1991: <ul style="list-style-type: none"> • Indian Economy on the eve of Independence • Indian Economy (1950-90) • Liberalisation, Privatisation and Globalisation : An Appraisal 	12	28
▪ Current challenges facing Indian Economy <ul style="list-style-type: none"> • Poverty • Human Capital Formation • Rural development 	10	17
Sub Total	22	45
Total	40	75
Project Work (Part 1): 10 Marks		

Students would prepare only ONE project in the entire academic session, which is divided into 2 terms i.e. Term I and Term II.

Term 1

Part A: Introductory Macroeconomics

Unit 2: Money and Banking

8 Periods

Money - meaning and supply of money - Currency held by the public and net demand deposits held by commercial banks.

Money creation by the commercial banking system.

Central bank and its functions (example of the Reserve Bank of India): Bank of issue, Govt. Bank, Banker's Bank, Control of Credit

Unit 4: Government Budget and the Economy

15 Periods

Government budget - meaning, objectives and components.

Classification of receipts - revenue receipts and capital receipts; classification of expenditure – revenue expenditure and capital expenditure.

Measures of government deficit - revenue deficit, fiscal deficit, primary deficit their meaning.

Unit 5: Balance of Payments

7 Periods

Balance of payments account - meaning and components;
Foreign exchange rate - meaning of fixed and flexible rates and managed floating.

Part B: Indian Economic Development

Unit 6: Development Experience (1947-90) and Economic Reforms since 1991

28 Periods

A brief introduction of the state of Indian economy on the eve of independence.
Indian economic system and common goals of Five Year Plans.
Main features, problems and policies of agriculture (institutional aspects and new agricultural strategy), industry (IPR 1956; SSI – role & importance) and foreign trade.

Economic Reforms since 1991:

Features and appraisals of liberalisation, globalisation and privatisation (LPG policy);
Concepts of demonetization and GST

Unit 7: Current challenges facing Indian Economy

17 Periods

Poverty- absolute and relative; Main programmes for poverty alleviation: A critical assessment;

Human Capital Formation: How people become resource; Role of human capital in economic development;

Rural development: Key issues - credit and marketing - role of cooperatives; agricultural diversification;

TERM 2 - SUBJECTIVE QUESTION PAPER		Marks	Periods
Theory: 40 Marks	Time: 2 Hours		
Part A: Introductory Macroeconomics			
▪ National Income and Related Aggregates		10	23
▪ Determination of Income and Employment		12	22
Sub Total		22	45
Part B: Indian Economic Development			
▪ Current challenges facing Indian Economy <ul style="list-style-type: none"> ● Employment ● Infrastructure ● Sustainable Economic Development 		12	18
▪ Development Experience of India – A Comparison with Neighbours- <ul style="list-style-type: none"> ● Comparative Development Experience of India and its Neighbours 		06	12
Sub Total		18	30
Total		40	75
Project Work: 10 Marks			

Term – II

Part A: Introductory Macroeconomics

Unit 1: National Income and Related Aggregates

23 Periods

What is Macroeconomics?

Basic concepts in macroeconomics: consumption goods, capital goods, final goods, intermediate goods; stocks and flows; gross investment and depreciation.

Circular flow of income (two sector model); Methods of calculating National Income - Value Added or Product method, Expenditure method, Income method.

Aggregates related to National Income:

Gross National Product (GNP), Net National Product (NNP), Gross Domestic Product (GDP) and Net Domestic Product (NDP) - at market price, at factor cost; Real and Nominal GDP. GDP and Welfare

Unit 3: Determination of Income and Employment

22 Periods

Aggregate demand and its components.

Propensity to consume and propensity to save (average and marginal).

Short-run equilibrium output; investment multiplier and its mechanism.

Meaning of full employment and involuntary unemployment.

Problems of excess demand and deficient demand; measures to correct them - changes in government spending, taxes and money supply through Bank Rate, CRR, SLR, Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

Part B: Indian Economic Development

Unit 7: Current challenges facing Indian Economy

18 Periods

Employment: Growth and changes in work force participation rate in formal and informal sectors; problems and policies

Infrastructure: Meaning and Types: Case Studies: Health: Problems and Policies- A critical assessment;

Sustainable Economic Development: Meaning, Effects of Economic Development on Resources and Environment, including global warming

Unit 8: Development Experience of India:

12 Periods

A comparison with neighbours

India and Pakistan

India and China

Issues: economic growth, population, sectoral development and other Human Development Indicators

Part C: Project in Economics	15 Periods
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Prescribed Books:

1. Statistics for Economics, NCERT
2. Indian Economic Development, NCERT
3. Introductory Microeconomics, NCERT
4. Macroeconomics, NCERT
5. Supplementary Reading Material in Economics, CBSE

Guidelines for Project Work: 20 Marks (ECONOMICS)

Only **ONE** Project is to be done throughout the session.

1. The objectives of the project work:

Objectives of project work are to enable learners to:

- Probe deeper into personal enquiry, initiate action and reflect on knowledge and skills, views etc. acquired during the course of class XI-XII.
- analyse and evaluate real world scenarios using theoretical constructs and arguments
- demonstrate the application of critical and creative thinking skills and abilities to produce an independent and extended piece of work
- follow up aspects in which learners have interest
- develop the communication skills to argue logically

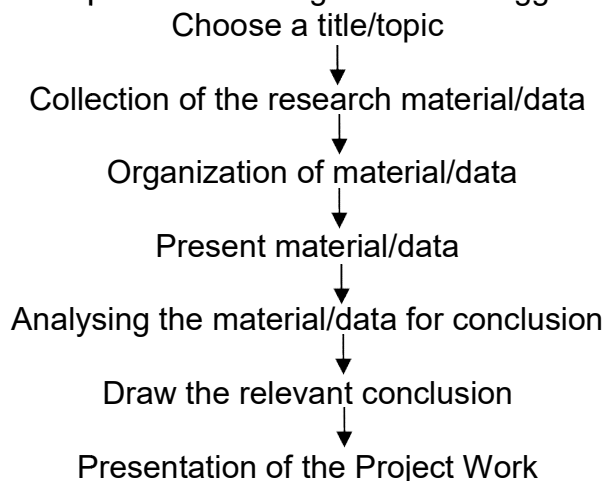
2. Role of the teacher:

The teacher plays a critical role in developing thinking skills of the learners. A teacher should:

- help each learner select the topic after detailed discussions and deliberations of the topic;
- play the role of a facilitator to support and monitor the project work of the learner through periodic discussions;
- guide the research work in terms of sources for the relevant data;
- ensure that students must understand the relevance and usage of primary evidence and other sources in their projects and duly acknowledge the same;
- ensure that the students are able to derive a conclusion from the content; cite the limitations faced during the research and give appropriate references used in doing the research work.
- educate learner about plagiarism and the importance of quoting the source of the information to ensure authenticity of research work.
- prepare the learner for the presentation of the project work.
- arrange a presentation of the project file.

3. Steps involved in the conduct of the project:

Students may work upon the following lines as a suggested flow chart:



- The project work can be in the form of Power Point Presentation/Exhibition/Skit /albums/files/song and dance or culture show /story telling/debate/panel discussion,

paper presentation and so on. Any of these activities which are suitable to visually impaired/differently-abled candidates can be performed as per the choice of the student.

4. Expected Checklist for the Project Work:

- Introduction of topic/title
- Identifying the causes, events, consequences and/or remedies
- Various stakeholders and effect on each of them
- Advantages and disadvantages of situations or issues identified
- Short-term and long-term implications of strategies suggested in the course of research
- Validity, reliability, appropriateness and relevance of data used for research work and for presentation in the project file
- Presentation and writing that is succinct and coherent in project file
- Citation of the materials referred to, in the file in footnotes, resources section, bibliography etc.

5. Term-Wise Assessment of Project Work:

- Project Work has broadly the following phases: Synopsis/ Initiation, Data Collection, Data Analysis and Interpretation, Conclusion.
- The aspects of the project work to be covered by students can be assessed during the two terms.
- **20 marks assigned for Project Work can be divided in to two terms in the following manner:**

TERM-I PROJECT WORK (Part 1): 10 Marks

The teacher will assess the progress of the project work in the term I in the following manner:

Month	Periodic Work	Assessment Rubrics	Marks
1-3 July- September	Instructions about Project Guidelines, Background reading Discussions on Theme and Selection of the Final Topic, Initiation/ Synopsis	Introduction, Statement of Purpose/Need and Objective of the Study, Hypothesis/Research Question, Review of Literature, Presentation of Evidence, Key Words, Methodology, Questionnaire, Data Collection.	5
4-5 October- November	Planning and organisation: forming an action plan, feasibility or baseline study, Updating/modifying the action plan, Data Collection	Significance and relevance of the topic; challenges encountered while conducting the research.	5
October- November	Mid-term Assessment by internal examiner		10

TERM- II - PROJECT WORK (Part 2): 10 Marks

The teacher will assess the progress of the project work in the term II in the following manner:

Month	Periodic Work	Assessment Rubrics	Marks
6-7 December- January	Content/data analysis and interpretation. Conclusion, Limitations, Suggestions, Bibliography, Annexures and Overall Presentation of the project.	Content analysis and its relevance in the current scenario. Conclusion, Limitations, Bibliography, Annexures and Overall Presentation.	5
8 January/ February	Final Assessment and VIVA by both Internal and External Examiners	External/ Internal Viva based on the project	5
		TOTAL	10

6. Viva-Voce

- At the end of the stipulated term, each learner will present the research work in the Project File to the External and Internal examiner.
- The questions should be asked from the Research Work/ Project File of the learner.
- The Internal Examiner should ensure that the study submitted by the learner is his/her own original work.
- In case of any doubt, authenticity should be checked and verified.

Expected Checklist:

- Introduction of topic/title
- Identifying the causes, consequences and/or remedies
- Various stakeholders and effect on each of them
- Advantages and disadvantages of situations or issues identified
- Short-term and long-term implications of economic strategies suggested in the course of research
- Validity, reliability, appropriateness and relevance of data used for research work and for presentation in the project file
- Presentation and writing that is succinct and coherent in project file
- Citation of the materials referred to, in the file in footnotes, resources section, bibliography etc.*

Mode of presentation/submission of the Project:

At the end of the stipulated term, each learner will present the research work in the Project File to the External and Internal examiner. The questions should be asked from the Research Work/ Project File of the learner. The Internal Examiner should ensure that the study submitted by the learner is his/her own original work. In case of any doubt, authenticity should be checked and verified.

Suggestive List of Projects:

Class XI	
·Effect on PPC due to various government policies	·Invisible Hand (Adam Smith)
·Opportunity Cost as an Economic Tool (taking real life situations)	·Effect of Price Change on a Substitute Good (taking prices from real life visiting local market)
·Solar Energy, a Cost Effective Comparison with Conventional Energy Sources	·Bumper Production- Boon or Bane for the Farmer
·Any other newspaper article and its evaluation on basis of economic principles	·Any other topic

Class XII	
·Micro and Small Scale Industries	·Food Supply Channel in India
·Contemporary Employment situation in India	·Disinvestment policy of the government
·Goods and Services Tax Act and its Impact on GDP	·Health Expenditure (of any state)
·Human Development Index	·Inclusive Growth Strategy
·Self-help group	·Trends in Credit availability in India
·Monetary policy committee and its functions	·Role of RBI in Control of Credit
·Government Budget & its Components	·Trends in budgetary condition of India
·Exchange Rate determination – Methods and Techniques	·Currency War – reasons and repercussions
·Livestock – Backbone of Rural India	·Alternate fuel – types and importance
·SarwaSikshaAbhiyan – Cost Ratio Benefits	·Golden Quadrilateral- Cost ratio benefit
·Minimum Support Prices	·Relation between Stock Price Index and Economic Health of Nation
·Waste Management in India – Need of the hour	·Minimum Wage Rate – approach and Application
·Digital India- Step towards the future	·Rain Water Harvesting – a solution to water crises
·Vertical Farming – an alternate way	·Silk Route- Revival of the past
·Make in India – The way ahead	·Bumper Production- Boon or Bane for the farmer
·Rise of Concrete Jungle- Trend Analysis	·Organic Farming – Back to the Nature
·Any other newspaper article and its evaluation on basis of economic principles	·Any other topic

Computer Science
CLASS - XI
Code No. 083
2021-22

1. Learning Outcomes

Student should be able to

- a) develop basic computational thinking
- b) explain and use data types
- c) appreciate the notion of algorithm
- d) develop a basic understanding of computer systems - architecture, operating system and cloud computing
- e) explain cyber ethics, cyber safety and cybercrime
- f) Understand the value of technology in societies along with consideration of gender and disability issues

2. Distribution of Marks

Unit No.	Unit Name	Marks	Periods	
			Theory	Practical
I	Computer Systems and Organisation	10	10	5
II	Computational Thinking and Programming - 1	45	50	35
III	Society, Law and Ethics	15	20	----
	Total	70	80	40

		Term-1	Term-2
		Marks	Marks
I	Computer Systems and Organisation	10	---
II	Computational Thinking and Programming - 1	25	20
III	Society, Law and Ethics	---	15
		35	35

3. Unit wise Syllabus

TERM 1:

Unit I: Computer Systems and Organisation

- Basic Computer Organisation: Introduction to computer system, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (Bit, Byte, KB, MB, GB, TB, PB)
- Types of software: system software (operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler & interpreter), application software
- Operating system (OS): functions of operating system, OS user interface
- Boolean logic: NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan's laws and logic circuits
- Number system: Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems.
- Encoding schemes: ASCII, ISCII and UNICODE (UTF8, UTF32)

Unit II: Computational Thinking and Programming – 1

- Introduction to problem solving: Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging). representation of algorithms using flow chart and pseudo code, decomposition
- Familiarization with the basics of Python programming: Introduction to Python, features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens (keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments
- Knowledge of data types: number (integer, floating point, complex), boolean, sequence (string, list, tuple), none, mapping (dictionary), mutable and immutable data types
- Operators: arithmetic operators, relational operators, logical operators, assignment operator, augmented assignment operators, identity operators (is, is not), membership operators (in, not in)
- Expressions, statement, type conversion & input/output: precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion), accepting data as input from the console and displaying output
- Errors: syntax errors, logical errors, runtime errors
- Flow of control: introduction, use of indentation, sequential flow, conditional and iterative flow control
- Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number
- Iterative statements: for loop, range function, while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc
- Strings: introduction, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()

TERM 2:

Unit II: Computational Thinking and Programming – 1

- Lists: introduction, indexing, list operations (concatenation, repetition, membership & slicing), traversing a list using loops, built-in functions: len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list
- Tuples: introduction, indexing, tuple operations (concatenation, repetition, membership & slicing), built-in functions: len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple, suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear search on a tuple of numbers, counting the frequency of elements in a tuple
- Dictionary: introduction, accessing items in a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len(), dict(), keys(), values(), items(), get(), update(), del(), clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted(), copy(); suggested programs : count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them
- Introduction to Python modules: Importing module using 'import <module>' and using from statement, Importing math module (pi, e, sqrt, ceil, floor, pow, fabs, sin, cos, tan); random module (random, randint, randrange), statistics module (mean, median, mode)

Unit III: Society, Law and Ethics

- Digital Footprints
- Digital society and Netizen: net etiquettes, communication etiquettes, social media etiquettes
- Data protection: Intellectual Property Right (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open source softwares and licensing (Creative Commons, GPL and Apache)
- Cyber-crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, preventing cyber crime
- Cyber safety: safely browsing the web, identity protection, confidentiality, cyber trolls and bullying.
- Safely accessing web sites: malware, viruses, Trojans, adware
- E-waste management: proper disposal of used electronic gadgets
- Indian Information Technology Act (IT Act)
- Technology & Society: Gender and disability issues while teaching and using computers

4. Practical

S.No.		Marks (Total=30)	Term-1 (15 Marks)	Term-2 (15 Marks)
1.	Python program	12	6	6
2.	Report file: Minimum 20 Python programs Term- 1 : Minimum 10 programs based on Term – 1 syllabus Term- 2 : Minimum 10 programs based on Term – 2 syllabus	7	4	3
	Viva voce	3	2	1
3.	Project + Viva voce Term – 1 : Synopsis of the project to be submitted by the students (documentation only) Term - 2 : Final coding + Viva voce (Student will be allowed to modify their Term 1 document and submit the final executable code.)	8	3	5

5. Suggested Practical List

Term - 1

Input a welcome message and display it.

- Input two numbers and display the larger / smaller number.
- Input three numbers and display the largest / smallest number.
- Generate the following patterns using nested loop.

Pattern-1	Pattern-2	Pattern-3
*	1 2 3 4 5	A
**	1 2 3 4	AB
***	1 2 3	ABC
****	1 2	ABCD
*****	1	ABCDE

- Write a program to input the value of x and n and print the sum of the following series:
 - $1 + x + x^2 + x^3 + x^4 + \dots + x^n$
 - $1 - x + x^2 - x^3 + x^4 + \dots + x^n$
 - $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots + \frac{x^n}{n}$
 - $x + \frac{x^2}{2!} - \frac{x^3}{3!} + \frac{x^4}{4!} + \dots + \frac{x^n}{n!}$
- Determine whether a number is a perfect number, an armstrong number or a palindrome.
- Input a number and check if the number is a prime or composite number.

- Display the terms of a Fibonacci series.
- Compute the greatest common divisor and least common multiple of two integers.
- Count and display the number of vowels, consonants, uppercase, lowercase characters in string.
- Input a string and determine whether it is a palindrome or not; convert the case of characters in a string.

Term - 2

- Find the largest/smallest number in a list/tuple
- Input a list of numbers and swap elements at the even location with the elements at the odd location.
- Input a list/tuple of elements, search for a given element in the list/tuple.
- Input a list of numbers and find the smallest and largest number from the list.
- Create a dictionary with the roll number, name and marks of n students in a class and display the names of students who have scored marks above 75.

6. Suggested Reading Material

- NCERT Textbook for COMPUTER SCIENCE (Class XI)
- Support Materials on the CBSE website.

Computer Science

CLASS-XII

Code No. 083

2021-22

1. Prerequisites

Computer Science- Class XI

2. Learning Outcomes

Student should be able to

- a) apply the concept of function.
- b) explain and use the concept of file handling.
- c) use basic data structure: Stacks.
- d) explain basics of computer networks.
- e) use Database concepts, SQL along with connectivity between Python and SQL.

3. Distribution of Marks:

Unit No.	Unit Name	Marks	Periods	
			Theory	Practical
I	Computational Thinking and Programming - 2	40	50	25
II	Computer Networks	10	10	---
III	Database Management	20	20	15
	Total	70	80	40

Unit No	Unit Name	Term-1	Term-2
I	Computational Thinking and Programming - 2	35	5
II	Computer Networks	---	10
III	Database Management	---	20
	Total	35	35

4. Unit wise Syllabus

TERM 1:

Unit I: Computational Thinking and Programming – 2

- Revision of Python topics covered in Class XI.
- Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)
- Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths
- Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file
- Binary file: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() and load() method, read, write/create, search, append and update operations in a binary file
- CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader()

TERM 2:

Unit I: Computational Thinking and Programming – 2

- Data Structure: Stack, operations on stack (push & pop), implementation of stack using list.

Unit II: Computer Networks

- Evolution of networking: introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET)
- Data communication terminologies: concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching)
- Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves)
- Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card)
- Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree)
- Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP
- Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting

Unit III: Database Management

- Database concepts: introduction to database concepts and its need
- Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)
- Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command
- Aggregate functions (max, min, avg, sum, count), group by, having clause, joins :Cartesian product on two tables, equi-join and natural join
- Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications

5. Practical

S.No		Marks (Total 30)	Term-1 (15 Marks)	Term-2 (15 Marks)
1	Lab Test:			
	1. Python program	8	6	2
	2. 3 SQL Queries based on one/two table(s), 2 output questions based on SQL queries	4	---	4
2	Report file: Term – 1 : Minimum 15 Python programs based on Term - 1 Syllabus Term – 2 : <ul style="list-style-type: none"> • Minimum 3 Python programs based on Term-2 Syllabus • SQL Queries – Minimum 5 sets using one table / two tables. • Minimum 2 programs based on Python - SQL connectivity. 	7	4	3
3	Project (using concepts learnt in Classes 11 and 12) Term – 1 : Synopsis of the project to be submitted by the students (documentation only, may not submit the code during Term - 1) Term - 2 : Final coding + Viva voce (Student will be allowed to modify their Term 1 document and submit the final executable code.)	8	3	5
4	Viva voce	3	2	1

6. Suggested Practical List:

Term-1

Python Programming

- Read a text file line by line and display each word separated by a #.
- Read a text file and display the number of vowels/consonants/uppercase/lowercase characters in the file.
- Remove all the lines that contain the character 'a' in a file and write it to another file.
- Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.
- Create a binary file with roll number, name and marks. Input a roll number and update the marks.
- Write a random number generator that generates random numbers between 1 and 6 (simulates a dice).
- Create a CSV file by entering user-id and password, read and search the password for given user-id.

Term-2

Python Programming

- Write a Python program to implement a stack using list.

Database Management

- Create a student table and insert data. Implement the following SQL commands on the student table:
 - ALTER table to add new attributes / modify data type / drop attribute
 - UPDATE table to modify data
 - ORDER By to display data in ascending / descending order
 - DELETE to remove tuple(s)
 - GROUP BY and find the min, max, sum, count and average
 - Joining of two tables.
- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing suitable module.

Database Management

- Create a student table and insert data. Implement the following SQL commands on the student table:
 - ALTER table to add new attributes / modify data type / drop attribute
 - UPDATE table to modify data
 - ORDER By to display data in ascending / descending order
 - DELETE to remove tuple(s)
 - GROUP BY and find the min, max, sum, count and average
- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing suitable module.

7. Suggested Reading Material

- NCERT Textbook for COMPUTER SCIENCE (Class XII)
- Support Materials on the CBSE website.

8. Project

The aim of the class project is to create something that is tangible and useful using Python file handling/ Python-SQL connectivity. This should be done in groups of two to three students and should be started by students at least 6 months before the submission deadline. The aim here is to find a real world problem that is worthwhile to solve.

Students are encouraged to visit local businesses and ask them about the problems that they are facing. For example, if a business is finding it hard to create invoices for filing GST claims, then students can do a project that takes the raw data (list of transactions), groups the transactions by category, accounts for the GST tax rates, and creates invoices in the appropriate format. Students can be extremely creative here. They can use a wide variety of Python libraries to create user friendly applications such as games, software for their school, software for their disabled fellow students, and mobile applications, of course to do some of these projects, some additional learning is required; this should be encouraged. Students should know how to teach themselves.

The students should be sensitised to avoid plagiarism and violations of copyright issues while working on projects. Teachers should take necessary measures for this.

PHYSICAL EDUCATION (048)
DISTRIBUTION OF SYLLABUS – CLASS XII – 2021-2022
TERM - I AND TERM - II

TERM I – THEORY MCQ BASED - 35 MARKS		TERM II – THEORY SHORT/LONG ANSWER – 35 MARKS	
*Unit No.	Name	*Unit No.	Name
1	Planning in Sports <ul style="list-style-type: none"> <input type="checkbox"/> Meaning & Objectives Of Planning <input type="checkbox"/> Various Committees & its Responsibilities (pre; during & post) <input type="checkbox"/> Tournament – Knock-Out, League Or Round Robin & Combination <input type="checkbox"/> Procedure To Draw Fixtures – Knock-Out (Bye & Seeding) & League (Staircase & Cyclic) 	3	Yoga & Lifestyle <ul style="list-style-type: none"> <input type="checkbox"/> Asanas as preventive measures <input type="checkbox"/> Obesity: Procedure, Benefits & contraindications for Vajrasana, Hastasana, Trikonasana, Ardh Matsyendrasana <input type="checkbox"/> Diabetes: Procedure, Benefits & contraindications for Bhujangasana, Paschimottasana , Pavan Muktasana, Ardh Matsyendrasana <input type="checkbox"/> Asthma: Procedure, Benefits & contraindications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottasana, Matsyasana <input type="checkbox"/> Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana
2	Sports & Nutrition <ul style="list-style-type: none"> <input type="checkbox"/> Balanced Diet & Nutrition: Macro & Micro Nutrients <input type="checkbox"/> Nutritive & Non-Nutritive Components Of Diet <input type="checkbox"/> Eating For Weight Control – A Healthy Weight, The Pitfalls of Dieting, Food 	4	Physical Education & Sports for CWSN (Children with Special Needs - DIVYANG) <ul style="list-style-type: none"> <input type="checkbox"/> Concept of Disability & Disorder <input type="checkbox"/> Types of Disability, its causes & nature (cognitive disability, intellectual

	Intolerance & Food Myths		<p>disability, physical disability)</p> <ul style="list-style-type: none"> □ Types of Disorder, its cause & nature (ADHD, SPD, ASD, ODD, OCD) □ Disability Etiquettes □ Strategies to make Physical Activities assessable for children with special need.
5	Children & Women in Sports <ul style="list-style-type: none"> □ Motor development & factors affecting it □ Exercise Guidelines at different stages of growth & Development □ Common Postural Deformities - Knock Knee; Flat Foot; Round Shoulders; Lordosis, Kyphosis, Bow Legs and Scoliosis and their corrective measures □ Sports participation of women in India 	7	Physiology & Injuries in Sports <ul style="list-style-type: none"> ● Physiological factor determining component of Physical Fitness ● Effect of exercise on Cardio Respiratory System ● Effect of exercise on Muscular System ● Sports injuries: Classification (Soft Tissue Injuries:(Abrasion, Contusion, Laceration, Incision, Sprain & Strain) Bone & Joint Injuries: (Dislocation, Fractures: Stress Fracture, Green Stick, Communated, Transverse Oblique & Impacted) Causes, Prevention& treatment ● First Aid – Aims & Objectives
6	Test & Measurement in Sports <ul style="list-style-type: none"> ○ Motor Fitness Test – 50 M Standing Start, 600 M Run/Walk, Sit & Reach, Partial Curl Up, Push Ups (Boys), Modified Push Ups (Girls), Standing Broad Jump, Agility – 4x10 M Shuttle Run ○ Measurement of Cardio Vascular Fitness – Harvard Step Test/Rockport Test - <p><u>Duration of the Exercise in Seconds</u> $\times 100$ 5.5 x Pulse count of 1-1.5 Min after Exercise</p>	9	Psychology & Sports <ul style="list-style-type: none"> ● Personality; its definition & types – Trait & Types (Sheldon & Jung Classification) & Big Five Theory ● Motivation, its type & techniques ● Meaning, Concept & Types of Aggressions in Sports

	<ul style="list-style-type: none"> ○ Rikli & Jones - Senior Citizen Fitness Test 		
8	Biomechanics & Sports <ul style="list-style-type: none"> ● Meaning and Importance of Biomechanics in Sports ● Types of movements (Flexion, Extension, Abduction & Adduction) ● Newton's Law of Motion & its application in sports 	10	Training in Sports <ul style="list-style-type: none"> ● Strength – Definition, types & methods of improving Strength – Isometric, Isotonic & Isokinetic ● Endurance - Definition, types & methods to develop Endurance – Continuous Training, Interval Training & Fartlek Training ● Speed – Definition, types & methods to develop Speed – Acceleration Run & Pace Run ● Flexibility – Definition, types & methods to improve flexibility ● Coordinative Abilities – Definition & types
TERM I – PRACTICAL		TERM II – PRACTICAL	
Project File (About one sport/game of choice)	05 Marks	Project File (Yoga and General Motor Fitness Test)	05 Marks
Demonstration of Fitness Activity	05 Marks	Demonstration of Fitness Activity/Yoga	05 Marks
Viva Voce (From Project File; Fitness)	05 Marks	Viva Voce (From Project File; General Motor Fitness; Yoga)	05 Marks

***For resource material refer Class XII Physical Education Handbook available at Board's Academic website: www.cbseacademic.nic.in**